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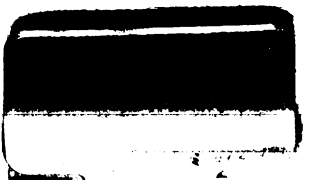

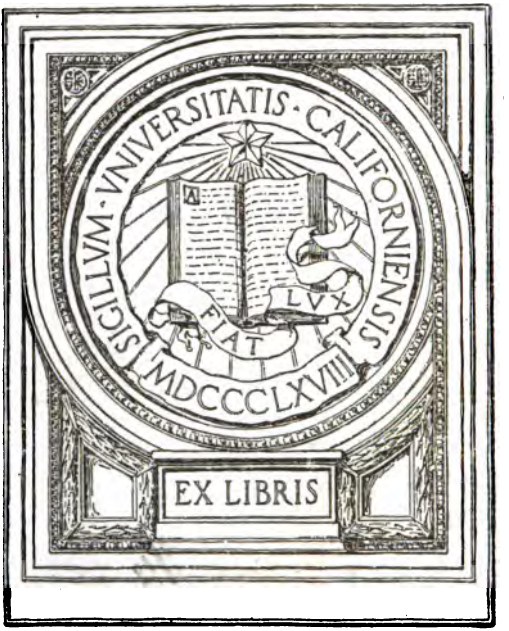
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J. H. BERNARDIN de SAINT PIERRE.

THE

Studies of Nature,

TO WHICH ARE ADDED,

The

INDIAN COTTAGE,

And

PAUL AND VIRGINIA.

BY J. B. DE ST. PIERRE.

In Two Vols.

UNIV. OF
CALIFORNIA

THE

WORKS

OF

SAINT-PIERRE.

COMPRISING HIS

STUDIES OF NATURE,

PAUL AND VIRGINIA,

AND

INDIAN COTTAGE.

WITH

A MEMOIR OF THE AUTHOR, AND EXPLANATORY NOTES,

BY

THE REV. E. CLARKE.

IN TWO VOLUMES.

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MEMOIR

OF THE

LIFE OF M. DE ST. PIERRE.

THE difficulty of procuring materials for the biography of living characters, is well known to all those who have ever undertaken such a task. Unless, indeed, such persons have held high situations in the state, or have raised themselves to distinction by great military achievements, the particulars which we are enabled to glean respecting them are generally confined to a few solitary facts. If this observation is true, with regard to our countrymen and fellow-citizens, how much more strongly does it not apply to the natives of a foreign land? When to this are superadded the obstacles resulting from war, which interrupts nearly all communication, the reader must be sensible how much the difficulty is increased.

These observations must plead in excuse for the scantiness of the following details, relative to the life of the author of the present work, the unassuming modesty of whose manners, and the retirement of whose habits, have thrown still farther impediments in the way of such research.

Jacques Bernardin Henri de St. Pierre was a native of Upper Normandy, where he was born at Havre de Grace, in the year 1737. His family must have been respectable, as the commissions he held under the French government

prove that he was by birth of that class which they denominated gentlemen. After receiving an education suitable to his rank in life, he entered into the army, in which he served in some of the campaigns towards the conclusion of the seven years' war.

Malta being threatened, in 1763, with a siege by the Turks, M. de St. Pierre was sent by his government to cooperate in the defence of that island. An affecting incident occurred at Toulon, when he was on the point of embarking. As he was going out of the Navy Coffee-House in that city, a man with a long beard, in a turban and Turkish dress, who was squatting on his heels at the door, embraced our author's knees, and said something to him in a language to which he was a stranger. A naval officer, who understood him, informed M. de St. Pierre that the man was a Turkish slave, who, being convinced that the Grand Signor would take the island, and make slaves of all he might find there, expressed his compassion for one, destined, so young, to experience a fate similar to his own.

Peace having deprived our author of all hope of promotion in his native country, he was induced to enter into the Russian service. M. de Villebois, born in Livonia, but of a French family, was at that time grand-master of the ordnance and general of the artillery of Catherine II. By him M. de St. Pierre was introduced into the service of the empress, and presented to her as one of the officers of his corps. In the year 1764 he made a tour through Russian Finland, in company with the generals of the corps of engineers, for the purpose of taking a military survey of that country, and of inspecting the fortified places. He speaks in the highest terms of the hospitable reception they every where experienced from the inhabitants, and has introduced into his work many observations collected in his tour.

The intelligence and ability of M. de St. Pierre strongly recommended him to the notice of his superior officers. M. de Villebois, in conjunction with General Bosquet, of the engineers, was making arrangements for his promotion; they both exerted themselves to the utmost of their power to retain him in the Russian service, by studying in every

possible way to render it agreeable, and by the offer of situations both honorable and advantageous. But the love of his native country, which he had previously served, and the desire of being farther useful to it, together with the high expectations he was led to entertain by the overtures of men in high official stations in the French cabinet, in duced him to persist in demanding his dismission, which he obtained in 1765, with the rank of captain.

On leaving Russia our author made an attempt to serve his country, at his own expence in Poland, where he joined the party of the Polish republicans, whose cause was espoused by Austria and France. By this step he involved himself in great dangers, and was taken prisoner by the Polish party in the interest of Russia. This misfortune befel him through the indiscretion of his guide, at the distance of three miles from Warsaw, from which city he was proceeding to the army of Prince Radzivil, with the agreement of the ambassador of the emperor and the French minister. He was conducted back to Warsaw, and thrown into prison; his captors even threatened to deliver him up to the Russians, unless he acknowledged that the French and Austrian ambassadors had jointly prevailed upon him to take this step. Though he had every thing to dread from the Russians, and might have implicated two persons in high stations in his disgrace, he persisted in taking the whole responsibility upon himself. He likewise exculpated his guide in the best manner he was able; hav ing given him time to burn the letters with which he was charged, by opposing, with loaded pistols, the Hulans who came to surprise them in the post-house where they had fixed their quarters for the first night, in the midst of a forest. For these services, which cost him much time and money, he never received any recompence whatever.

On his release from confinement, M. de St. Pierre returned to Paris, where he presented to the minister for foreign affairs a long memorial relative to the state of the north, in which he predicted the future partition of Poland by the contiguous powers. This partition actually took place a few years afterwards, and the only point in which his predictions were not fully verified was, that those powers

did not at first divide the whole of the country among them.

Not long afterwards, M. de St. Pierre received the appointment of captain-engineer of the Isle of France. He accordingly set sail for that colony on the 3d of March, 1768, in the Marquis de Castries, laden with naval stores for Bengal. The voyage was unattended with any circumstance worthy of notice till the ship reached the latitude of the Cape of Good Hope, when she encountered a violent storm, in which the crew had a very narrow escape from destruction. This tempest is thus described by the author:

"On the 23d of June, at half past twelve at night, a sea beat in four out of the five great cabin-windows, though the dead lights were barred like a St. Andrew's cross. The vessel pitched as if she would have stood on end in the water. Hearing the noise, I opened the door of my chamber, which was instantly filled with water, that floated the furniture about. It ran out at the door of the great cabin like the sluice of a mill; above thirty hogsheads of water came in by this accident. The carpenters were called, lights were brought, and new boards nailed against the windows as quickly as possible. We now ran under a mizen, and the wind and sea were truly frightful.

"This disorder was scarcely put to rights, when a large chest, that served for a table, full of salt and bottles of champagne, broke its lashings. The rolling of the ship threw it to and fro like a die. This enormous box weighed many tons, and threatened to crush us to pieces in our cabins. At last it burst open, and the bottles rolling about and breaking, caused a confusion that is inexpressible. The carpenters returned, and with the greatest difficulty replaced and fastened it.

"The rolling of the ship not suffering me to sleep, I lay down upon the bed in my boots and morning gown. My dog seemed in the greatest fright, and while I amused myself with soothing him, I saw a flash of lightning through the crevice of the port-hole, and heard it thunder This was about half past three in the morning. In a moment a second clap of thunder succeeded, and the dog began to fly about and howl. The lightning flashed again in an instant. Thunder immediately followed, and I heard

the people on deck cry out that some ship was in danger; in fact, the noise was like the report of a cannon fired near us, as it did not roll at all. Perceiving a strong smell of sulphur, I went upon deck, and immediately felt it excessively cold. Every thing was silent, and the night so dark that I could distinguish nothing. I presently perceived somebody near me, and asked what was the matter. The man answered: They are carrying the quarter-master to his birth, he has fainted away, and so has the pilot. The lightning has struck the ship, and shivered the main-mast.

"The crew formed a ring upon the forecastle. The lightning had descended so far along the mast. The woman, who had just lain in, had seen a globe of fire at the foot of her bed; yet nobody could discover any trace of the fire. Day-light was looked for with impatience.

"At day-break I again went upon deck. Some very black clouds appeared, and others of a copper color. The wind was westerly, where the horizon appeared of a flaming red, as if the sun was going to rise in that quarter. The east was totally black. The sea formed monstrous waves, that rose like pointed mountains composed of a number of smaller hills; on their summits were raised spouts of foam, colored like so many rainbows. They were thrown so high as to appear from the quarter-deck to be higher than the tops. The wind made so much noise in the rigging, that we could scarcely hear each other speak. We ran before the wind under a mizen. A piece of the top-mast hung from the end of the main-mast, which was split in eight places to a level with the deck. Five of the iron-rings with which it was bound were melted. The gangways were covered with the fragments of the top and main-top-mast. At the rising of the sun the wind also rose with redoubled and inexpressible fury. The ship, no longer obedient to the helm, was entirely at the mercy of the wind and waves. The mizen-sail having gibed its braces, broke soon afterwards; the force with which it was continually striking against the mast, we feared would have broken the latter by the board. In an instant the forecastle was under water. The waves broke over the larboard cat-head, insomuch that the bowsprit was not to be seen.

Clouds of surf inundated, even as high as the poop. The ship being ungovernable, presented her broadside to the waves; at every roll she took in water, even to the foot of the main-mast, and rose again with the utmost difficulty.

"The captain, in this moment of danger, called to the pilots to put before the wind; but the vessel would not in the slightest degree answer the helm. He ordered the sailors to reef the mizen, which the wind was carrying away piece-meal; the poor fellows were sheltering themselves under the quarter-deek, some crying, others on their knees praying. I crept along the larboard gangway, holding fast by the tackling, and was followed by a Dominican, who was chaplain of the ship, a passenger, and several of the seamen, and we at length reefed the sail, though above half of it was carried away. They would have likewise bent a stay-sail, in order to put before the wind, but it was torn like a sheet of paper.

"We remained then like a log, rolling about in a most frightful manner: having let go the tackle by which I held, I slid as far as the foot of the main-mast, where the water was up to my knees. In short, next to God, we were indebted for our safety to the strength of the ship, and to her having three decks, without which she must have filled. Thus we were tossed about till the evening, when the storm abated. The moveable furniture was almost entirely topsy turvy, or broken to pieces; and I, more than once, found myself upright on my feet upon the wainscot of my cabin. The officers declared they never saw so great a sea. All the upper works of the ship were so shaken by it, that mutton bones, which I put into the joints of the pilasters of the great cabin, were crushed to pieces by the play of the timbers.

"The effects of the lightning are not to be described. The main-mast was split in a zigzag: five feet of the mast, immediately under the top, was splintered forward, or toward the head of the ship, and so five feet alternately the whole length of the mast to the deck; so that the sound on one side answered to the shattered on the other. In these cracks I could not perceive any smell or blackness, the wood being of its usual color."

Having escaped from this imminent peril, M. de St. Pierre arrived without farther accident at the Isle of France. During a residence of two years, he traversed the island in every direction on foot, attended by two negro slaves, and made himself acquainted with the nature of the country, its productions, its means of defence, both natural and artificial. Nor was the attention of our philanthropic author confined to these subjects; his heart revolted at the atrocious cruelties which he saw practised upon the helpless negroes; whose horrid treatment he describes with the eloquence and feeling which characterize his pen. It is not improbable that these enormities might have contributed to hasten his return to his native land. Before he quitted the colony, he had the satisfaction of seeing and conversing with Aoutouru, the native of Otaheite, brought from that island by M. Bougainville, who stopped at the Isle of France, on his way to Europe.

Our author having obtained permission to return to France, embarked on board L'Indienne, of 60 guns, and set sail on the 9th of November, 1770. The Indienne first touched at the Isle of Bourbon, where M. de St. Pierre went on shore; but, during his absence, the Indienne, with all the other vessels at the island, were driven out to sea by a violent tempest. As he could hear no tidings of the ship, which had all his effects on board, he proceeded in the Normande pink to the Cape of Good Hope. His description of the manners of the inhabitants of that settlement was frequently mentioned by the celebrated Dr. Goldsmith, as a master-piece of good sense, judicious observation, and sensibility. From the Cape he took his passage in a vessel called the Digue, and arrived in France on the 22d of May, 1771.

During this voyage, our traveller had occasion to make a multitude of interesting observations, and to collect materials for many of those beautiful descriptions of various scenes of nature, which the reader will find dispersed through these volumes.

Other causes, besides that already mentioned, undoubtedly tended to make our author's residence in the Isle of France extremely disagreeable. "I was persecuted," says

he, " by the ordinary engineers who were there, because I did not belong to their corps. I was sent to this country to make my fortune; but I should have run considerably in debt, during my residence in the island, had I not lived upon vegetables. I shall say nothing of all the private mortifications I underwent, but merely observe, that I sought to divert my thoughts from them by turning my attention to the distresses which afflicted the island in general. It was solely with a view to apply a remedy to these, that some time after my return, in the year 1773, I published a narrative of my voyage. I thought, in the first place, to render an essential service to my country, by demonstrating that this island, which was filled with troops, was in no respect fit either for the mart or the citadel of the commerce of France with the East Indies, from which it is fifteen hundred leagues distant. This position I proved by the events of former wars, in which Pondicheri was always taken by the enemy, though the Isle of France swarmed with troops."

For these services, as well as for many others, our author received no sort of reward, but indirect persecutions and calumnies on the part of the inhabitants of the island, whom he reproached for their barbarous treatment of their slaves. Nor was he ever sufficiently indemnified for the loss he sustained on his return from the colony, or for the very low salary he received, which was not equal to one half of that enjoyed by engineers of his rank.

Disgusted with the treatment he had received, he quitted the service, and withdrew into profound retirement, to meditate unmolested on such objects as had engaged his attention, during his voyages and travels, to arrange the materials which his observation of Nature had enabled him to collect, and to devote himself to the pleasing pursuits of literature and science, so conjenial to his disposition

Though he had retired from the bustle of life, our author was far from enjoying the tranquillity he desired. False friends and open enemies contributed to embitter his days. On this subject the reader will not be displeased to hear him who speaks so well, speak for himself.

" When my pretended friends perceived, that after such

a melancholy experience of mankind, I sighed only for a solitary life; that I had principles from which I would not depart; that my opinions on Nature were contrary to their systems; that I would neither be their unqualified admirer nor humble dependent; and, finally, that they had effected a breach between me and my patron, whom they frequently calumniated, for the purpose of estranging me from him, though at the same time they assiduously courted his favour, they then became my enemies. The great are reproached for many vices; but I have always found more among the little, who strive to please them.

"The latter were too artful to make an open attack upon me, before a person to whom I had given, even in the midst of my misfortunes, the most disinterested proofs of my friendship. They launched out, on the contrary, in his presence as well as in mine, into the highest panegyrics on my principles, and on various easy acts of moderation which were the result of them; but they exaggerated them to such a degree, and appeared so anxious concerning the opinion which would be formed of them by the world, that it was obvious they were striving only to make me renounce them, and that they had no other view in praising my patience, but to make me lose it. Thus they calumniated while they pretended to praise me, and destroyed my reputation under the resemblance of compassion. I therefore withdrew from those deceitful men, who even justified themselves at my expence, by representing me as mistrustful, after they had in so many ways abused my confidence.

"I must, however, accuse myself of too acute sensibility for pain, whether physical or moral. A single thorn gives me greater pain than a hundred roses confer pleasure. The best company appears bad to me, if I meet there with one self-sufficient, envious, malicious, perfidious person. I am perfectly aware that honorable men associate daily with all these descriptions of people, that they endure them, that they even flatter them, and make all the use they can of them; but I likewise know that these honorable men carry into society nothing but the jargon of the world, and that I, on the contrary, take with me my whole heart; that they pay deceivers in their own coin, and I with all my substance,

that is, with my sentiments. Though my enemies have represented me as mistrustful, most of the errors of my life especially with respect to them, have proceeded from too much confidence; and, after all, I had much rather they should complain that I had distrusted them without reason, than that they should themselves have had any reason to distrust me.

"I now sought friends among men of a contrary party, who had manifested the most ardent desire to draw me into it; but no sooner had I joined it, than they ceased to set any value on my pretended merit. When they perceived that I was unwilling to adopt all their prejudices, that I sought nothing but the truth; that, resolved not to slander either their enemies or my own, I was totally unfit for intrigue; that my feeble virtues, which they had so highly extolled, had been of no utility to me; that they were incapable of injuring any one, and, finally, that I attached myself neither to them nor to their antagonists, they totally left me, and even persecuted me in their turn. Thus I found by experience, that, in a weak and corrupted age our friends entertain no higher consideration for us than that which is shewn us by their very enemies, and that they value us only inasmuch as we are useful or formidable to them. I have every where seen many kinds of associations, and have always found them to consist of the same description of men. They march, it is true, under standards of different colors; but they are all those of ambition. They have all but one aim, that of reigning. Nevertheless, the interest of their corps excepted, I have not met with two whose opinions were not as different as their faces. What constituted the delight of one, was the grief of another; to the one evidence appeared absurdity, and absurdity evidence. What am I saying? In the accurate study which I made of men, with a view to find among them some one to console me, I have seen the most celebrated differing totally from themselves in the morning and in the evening, before and after dinner, in private and in public. Nay, even books the most highly extolled are full of contradictions. Thus I learned that there are as many systems for for curing the diseases of the mind as those of the body, and

that it was extremely imprudent of me to add the unskilfulness of physicians to my own infirmities, since a greater number of patients, of every description, are killed by the remedy than the disease.

"My misfortunes, however, had not yet arrived at the highest pitch. The ingratitude of men, of whom I had deserved the best, unforeseen family vexations, the total exhaustion of my little patrimony, expended on voyages for the service of my country, the debts I remain saddled with on that account, my disappointed hopes of better fortune—all these evils combined, gave a shock both to my health and my reason. I was seized with a strange malady; flashes of fire, resembling lightning, danced before my eyes. Every object appeared double and moving: like Œdipus, I saw two suns in the heavens. My heart was not less confused than my head. On the finest summer's day I could not cross the Seine in a boat, without feeling the most dreadful apprehensions; though I had preserved my presence of mind in the midst of a tempest off the Cape of Good Hope, on board of a ship that was struck by lightning. If I only walked in a public garden, near a basin of water, I experienced sensations of spasms and horror. Sometimes I was even inclined to suppose that I had been bitten, without knowing it, by some mad dog. A much worse accident had befallen me. I had been torn by the envenomed fangs of calumny.

"It is an extraordinary circumstance, that my malady never seized me but in the society of men. I found it impossible to remain in an apartment with company, especially if the doors were shut. I could not even bear to walk in the alley of a public garden, where several persons were assembled. The moment they cast their eyes upon me, I fancied them engaged in slandering me. It was no relief to my mind that they were strangers to me; I recollected that I had been calumniated by my own friends, and for the most upright actions of my life. When I was alone, my malady abated, and it was less violent in places where I saw nothing but children. For this reason I frequently went and seated myself on the benches in the gardens of the Thuilleries, to look at the children playing on the grass,

and the young dogs running after them. Their innocence reconciled me with the human species, much better than all the wit of our dramas, or all the sentences of our philosophers. But if any person came to walk near me, I felt a violent agitation, and immediately withdrew. 'I have sought only to deserve well of mankind,' said I often to myself; 'why then does the sight of them make me uneasy?' In vain I called reason to my aid; my reason had no influence over a disease which deprived it of all its strength. It was weakened by the very efforts it made to subdue the malady, because it employed them against itself. It had not occasion for combats, but for repose.

"Medicine, indeed, offered me relief. It taught me that the seat of my malady was in the nerves. But if I had not been too poor to comply with its prescriptions, I had too much experience to believe in their efficacy. Three persons of my acquaintance, who were afflicted with the same disorder, were carried off within a short time, by three different remedies, cried up as specifics for the cure of nervous diseases; the first by bathing and bleeding; the second by the use of opium, and the third by that of ether. The two latter were celebrated physicians* of the faculty of Paris, both renowned for their writings on medical subjects, and particularly on maladies of the nerves.

"I again found, but on this occasion from the experience of others, how much I was mistaken in expecting from men the cure of my maladies; how vain were their opinions and doctrines, and how foolish I had been all my life, to make myself miserable in order to render others happy.

"From the multitude of my misfortunes, however, I deduced a powerful motive of resignation. On comparing the good and evil with which our transient days are chequered, I discovered a grand truth, which is but little known, I mean this, that there is nothing hateful in nature,

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* These were Dr. Roux, author of the *Journal de Medicine*, and Dr Buquet, professor of the faculty of medicine at Paris: both of whom died in the vigour of their age, by their own remedies for disorders of the nerves.

and that her author, having placed us in a state in which we must necessarily die, has implanted in our bosoms as many motives for loving death as for being attached to life.

" All the branches of our life are mortal as well as the trunk. Our fortunes, our friendships, our reputations, our attachments, all the objects of our fondest affections, perish more than once before us; and if the happiest destinies were exposed to our view, with all the misfortunes by which they were accompanied, they would appear like those oaks which embellish the earth with their vast branches, but which lift towards heaven others still more vast, which the lightnings have blasted.

" As for me, feeble shrub, battered by so many storms, I had nothing more to lose. Perceiving also, that henceforward I had nothing to hope either from others or from myself, I resigned myself to God alone,and promised him never to expect any thing essential to my happiness from any particular person, to whatever extremity I might be reduced.

" My confidence was pleasing to him who is never implored in vain. The first fruit of my resignation was the alleviation of my woes My solicitude gradually subsided, when I ceased to struggle against it. I soon afterwards received a pension from the king, without the least solicitation, through the influence of a person with whom I was unacquainted, and in a department of administration to which I had never rendered any services. Like Virgil, I partook of the bounty of Augustus. It was a moderate gratuity, annual, uncertain, depending on the will of a minister, who was himself liable to revolutions, on the caprice of intermediate persons, and on the malignity of my enemies, who could sooner or later deprive me of it by their intrigues; but, after a little reflection on the subject, I found that I was treated by Providence in the very same manner as mankind, to whom it has given, since the beginning of the world, in the harvest, only an annual, uncertain subsistence, borne by grasses, incessantly battered by the winds, and exposed to the depredations of birds, and of insects. But it conferred on me a distinguished advantage over the greatest part of mankind, as my harvest cost me

neither sweat nor labour, and I enjoyed the full exercise of my liberty.

" The first use I made of it was to withdraw from the deceitful men, whom I had no farther occasion to solicit. When I no longer saw them, my soul recovered its tranquillity. Solitude is a lofty mountain, from which they appear exceedingly diminutive. Solitude was, however, detrimental to me, as it inclined me too much to meditation. It was to J. Jacques Rousseau that I was indebted for the recovery of my health. I had read in his immortal works, among other natural truths, that man is made for labour, and not for contemplation. Till then I had exercised my mind and rested my body; I now changed my practise, exercising the body and suffering the mind to enjoy repose. I renounced most kinds of books. I cast my eyes on the works of nature, who spoke to all my senses a language which neither time nor nations are capable of altering. The plants of the fields and of the meadows were my history and my journals. It was not my thoughts that proceeded painfully to them, as in the systems of men; but their thoughts which came gently to me, under a thousand agreeable forms. In them I studied without effort the laws of that universal wisdom which surrounded me from my cradle, and on which I had before bestowed but slight attention. I followed its traces in every part of the world, by perusing voyages and travels. These were the only modern books for which I retained any partiality, because they transported me into other societies than that in which I was wretched, and especially because they treated of the various works of nature.

" I discovered, by means of them, that in every part of the world there exists for all men a portion of happiness, of which they are almost every where deprived, and that though they are in a state of warfare in our political order which divides them, they are in a state of peace in the order of Nature, who invites them to live together in harmony. These consolatory meditations brought me back insensibly to my former plans of public felicity, not with a view to execute them myself, as I had originally intended, but at least for the purpose of composing with them an in-

teresting picture. The mere speculation of a general felicity was now sufficient for my individual happiness. I likewise thought that my imaginary plans might some day be realized by more fortunate persons. This wish was strengthened on surveying the wretched creatures of whom our societies consist. From my own privations, I was sensible of the necessity of a political order conformable to that of Nature. In short, I composed one after the instinct and the wants of my own heart.

"But while I was thus turning my attention to the happiness of mankind, my own was interrupted by new misfortunes. My health and my experience of the world prevented me from soliciting, in my native land, the continuance of those feeble resources which I was on the point of losing, or from going abroad in quest of others. Besides, my works were not of such a nature as to interest any minister in my favor. I was anxious to produce others, better calculated to merit for me the bounty of government. I published my *Studies of Nature*. I have the vanity to believe, that in these I have destroyed dangerous errors, and demonstrated important truths. Their success has procured me, unsolicited, abundance of compliments from the public, and some annual favors from the court, but so uncertain, that a mere change of administration has not only stripped me of the greatest part of them, but even of others still more considerable, which I had enjoyed fourteen years. The public favor towards my work has, however, been more constant, and to this I am indebted for some tranquillity and repose."

"The Studies of Nature first made their appearance in the month of December, 1784. "I composed the greatest part of this work," says the author, "in a ready-furnished hotel, in the Rue de la Magdeleine, and I arranged it in a little garret in the new street of St. Etienne du Mont, where I resided four years, in the midst of physical and domestic afflictions, of no common kind. There too I enjoyed the most exquisite pleasures of my life, amid profound solitude and an enchanting horizon. There I put the finishing hand to my Studies of Nature, and there I published them."

No sooner was this work made public, than numerous pirated editions attested the merit of the performance, and the avidity with which it was read; though at the same time they threatened to rob the author of the well-earned profit of his labors. Amidst the many mortifications he had to endure on this account, he, however, gathered many flowers, and some fruit. The public favor brought his former services into notice, and the king, of his own accord, conferred on him a small annual gratuity. These first gifts of fortune, added to others, which had some appearance of solidity, and, above all, the produce of two editions of his work, led M. de St. Pierre to think of realizing a wish he had long cherished: this was, to go and continue his Studies of Nature in the bosom of Nature herself. He formed the design of purchasing a small farm, where, far from the injustice and jealousy of men, he might devote his farther attention to the cause of the tides, and of the currents of the sea; where he might collect new harmonies in the delightful study of plants, and complete his Arcadia, only one book of which was yet composed. With these ideas of public felicity were combined plans of private happiness, which the amiable author was on the point of realizing, when the revolution intervened, and blasted all his projects.

The part which M. de St. Pierre took during this dreadful period of intestine commotion, and the motives which influenced his conduct, cannot be better illustrated than in his own words. "Notwithstanding my insufficiency," says he, "had my health permitted, I should have been ambitious of the glory of defending public liberty; but I have such an exquisite and unfortunate sense of my own liberty, that it is impossible for me to remain in an assembly if the doors are shut, and if the avenues are not so free that I can go away whenever I please. This desire of using my liberty never fails to arrive at the moment when I imagine that I have lost it, and it acquires such strength, as to produce an actual physical and moral malady, which I am unable to prevent. It extends farther than the circumference of an apartment. During the commotions in Paris, after the departure of M Necker, when the populace were burning the barrier-buildings round about the city, while within the air resounded

with the alarming noise of the tocsians, which rang night and day in every steeple at once, and with the clamors of the people, crying out the Hussars were entering the suburbs, to destroy all before them with fire and sword, God, in whom I had placed my confidence, granted me the grace to be perfectly composed. I was prepared for every event, though alone in a detached house, situated in a solitary street, and at the extremity of the suburbs. But when, on the following day, after the taking of the Bastille, the removal of the foreign troops, whose neighbourhood had caused such apprehensions, and the establishment of civic patroles, I was informed that the gates of Paris were shut, and that nobody was permitted to leave the city, I felt the strongest inclination to quit it. While all the inhabitants were congratulating each other on the recovery of their liberty, I considered mine as lost: I looked upon myself as a prisoner within the walls of that vast capital, and felt myself circumscribed; nor was my imagination pacified till I found, in walking on the Boulevards, an iron gate, the lock and bolts of which were broken, and which was not yet guarded. Through this I went into the field, and proceeded about a hundred paces, to convince myself that I had not lost my natural rights, and that I might go, if I pleased, all over the world. After this essay of my liberty, I was perfectly easy, and returned to my tumultuous quarter, which I afterwards felt no anxiety to leave.

"A few days after this circumstance, when the executions at the Greve, without the formality of justice, and the posted lists, by which many other persons were proscribed, occasioned universal apprehension that wicked men would make use of the popular vengeance to gratify private animosities, and that Paris would become a theatre of anarchy, carnage, and horror; various friends offered me peaceful and agreeable retreats, both in and out of the kingdom, where I might have enjoyed the repose so necessary for my studies. I declined their favors. I preferred remaining on board the great vessel, the capital, battered on all sides by the tempests, though I could be of no service in working her, but in the hope of contributing to her tranquillity. I strove, therefore, to pacify the turbulent, and to encourage

the dejected, whenever I had an opportunity to contribut with my person, or my purse, to the guards, so necessary t to the police; to attend from time to time at the committee of my district, one of the wisest in Paris, and to give my opinion whenever I was allowed.

" It was at the urgent solicitation of the inhabitants or my quarter, who entertained a high opinion of me, because I had written a book, that I made an effort over my health, and attended the first assembly of the district. I found that my stu lies had not diminished my infirmities, and that the revolution had not made my fellow-citizens any wiser. They all spoke at once. I submitted to them three propositions, which they would not give themselves the trouble to discuss. They likewise conferred on me the honor of appointing me an elector, but I resigned the office the following day, on account of the state of my health, physical and moral. I found by experience what I before knew, that the people were anxious for the public welfare; but that associations were intent only on their private advantage. Besides, had I not been prevented by indisposition, I should still have been at a loss what side to take. I was bound by duty to the people, and by gratitude to the king, whose bounty had been for twelve years my support I had combated aristocratic despotism, and I was determined not to flatter popular anarchy. I saw among the popular leaders men who had profited most by the favors of the court, and in the court-party others who had most flattered the people. I knew that both were ambitious, that is, men of the most dangerous description, according to my judgment. They were strangers to friendship and equality, though they had those terms incessantly in their mouths.

" Had I, under these circumstances, accepted any public employment, I should have been under the necessity of espousing the interests of a party. I should have been obliged to promise and to deceive, to observe abuses and to wink at them, and to pay implicit obedience in every particular to the people, in order to appear to govern them. With so many reasons for withdrawing from our turbulent assemblies, I had as many for renouncing my plans of retirement. The country was still more violently agitated than the city; and

though I had been offered peaceful and agreeable retreats out of the kingdom, I should have reproached myself had I been capable of forsaking my country at such a crisis. I reflected that though I could not quell the spirit of anarchy, by which it was convulsed, still I might influence that of individuals, moderate one, encourage another, and console a third. I determined, therefore, to remain in my solitude, physical and moral, persuaded, that being attached to no party, I was the more likely to be acquainted with the national interest, and that, if I could serve it at all, I might do it more effectually by means of the pen, by which I had obtained some success, than by words, as I had not been accustomed to speak in public."

This idea M. de St. Pierre executed in a production, entitled the "Wishes of a Recluse," in which, with the same benevolence that pervades all the rest of his works, he examines certain political principles, and gives abundance of excellent advice to the then rulers of his distracted country. Nor did he lose sight of temporary circumstances, in which he thought that the exercise of his literary talents might be attended with utility. After the return of the king from the frontiers, when the nation was divided into two parties, one of which clamored for the adoption of a republican system, while the other wished to retain the monarchical form of government, and all were invoking war, internal and external, our author hastened to remind the people of the ancient obligations they owed to their sovereign, and the sovereign of his duties toward his people. Though these observations were refused by the editors of more than one Paris Journal, they, however, found a place in the *Petites Affiches*, and were published in sufficient time to produce a good effect even upon the National Assembly.

In various passages dispersed through his works, M. de St. Pierre feelingly regrets the want of a partner, to partake in his joys and to assist him to endure the calamities incident to life. This addition to his domestic happiness he received while he was lamenting the dreadful state into which his unhappy country was plunged. About the year

1793, he met with a lady every way worthy of his affection, and made her his wife.

The years of our amiable author now passed away in the enjoyment of conjugal felicity, and in the cares inseparable from a rising family. For these, as he was now descending into the vale of life, he thought it time to make some provision. With this view he addressed a letter, in the year 1803, to the editor of the *Decade Philosophique*, in which he complains of the losses he had sustained by the piracies of unprincipled booksellers, and the bankruptcy of the person in whose hands he had trusted the fruits of his literary labors. He then proceeds: "The study of Nature soothes the mind under the injuries of fortune, and what is still more, under those of society. Nevertheless, I cannot calmly reflect on the future lot of three small children and of my beloved partner, who bestows such tender care on my old age and on their infancy. I am now nearly sixty-six years old; my eldest child, a girl, is not more than nine; and the last, a boy, is still carried about at the breast in the arms of his young mother. As for myself, I am descending the mountain of life, without either effort or regret; but they have to climb it after me, without resources and without support. During the difficulties of the journey they will want some marks of paternal solicitude and foresight, if, for no other reason, at least, to induce them to love their country. I have, it is true, some manuscripts to leave, but to judge from the enemies raised up against me, by those which I have already published, this would be the same as to bequeath them persecutions. I have not been able to think of any thing more suitable to their future situation and my present resources, than to open in their favor a subscription for that portion of my works which has procured me the greatest number of friends; I allude to Paul and Virginia, which names I have given to my eldest son and my daughter. Many children have received the same names from their parents, as I have frequently had the satisfaction to observe, both in the metropolis and in the country. I have likewise reason to believe that this performance has met with a reception equally favorable in all the other countries of Europe, to judge from the English, Italian, Dutch, Ger-

man, Polish, and Russian translations, which I have in my library. I say nothing of the piracies of the work in the original language, because they have contributed only to my ruin. I have, therefore, thought that a new edition, corrected by myself, and executed in the highest style of perfection, both with regard to typography and engravings, would be generally acceptable, and, by defying the arts of pirates, would be productive of advantage to my children."

This letter was accompanied with the plan of the intended publication. The author proposed to print the work in quarto, with six illustrative engravings, from new designs, and his own portrait, at the price of five louis for proof impressions, and three louis for the common copies; and these were to have been ready for delivery to the subscribers in the spring of 1805.

The writer is under the necessity of adding, with regret, that the hopes of the amiable author were again doomed to experience disappointment, and that he was obliged to relinquish this plan for want of the encouragement indispensably necessary for its execution. Since that period he has continued to reside at Paris, where he lives in retirement, happy in the bosom of his family, and in the narrow circle of a few select friends.

PAUL AND VIRGINIA.

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On the eastern declivity of the mountain which rises behind Port Louis, in the Isle of France, are still to be seen, on a spot of ground formerly cultivated, the ruins of two little cottages.

They are situated almost in the middle of a bason formed by enormous rocks, which has only one opening turned toward the north.

From that opening, you perceive on the left, the mountain known by the name of Mount Discovery, from which signals are repeated of vessels steering for the island; and at the bottom of this mountain, the city of Port Louis; to the right, the road, which leads from Port Louis to the quarter of Pamplemousses; afterwards the church of that name, which rises with its avenues of bamboos, in the middle of a great plain; and beyond it, a forest which extends to the farthest extremities of the island.

You have in front, on the brink of the sea, a view o Tombay: a little to the right Cape Misfortune, and beyond that the boundless ocean, in which appear, on a leve. with the water's edge, some uninhabited little isles, among others Mitre Point, which resembles a bastion in the midst of the waves.

At the entrance of this bason from whence so many objects are distinguishable, the echoes of the mountains incessantly repeat the noise of the winds which agitate the neighbouring forests, and the roaring of the billows, which break at a distance upon the shallows; but at the very foot of the cottages, no noise is any longer to be heard, and nothing to be seen around except great rocks, as steep as the wall of a house.

Tufts of trees grow at their bases, in their clefts, and up to their very summits, on which the clouds settle.

The rains which are attracted by their peaks frequently paint the colors of the rainbow on their green and dusky sides, and constantly supply, at the bottom, the sources of which the small river of the Latanier is formed. A profound silence reigns through this inclosure, where all is peace; the air, the waters, and the light. Scarcely does the echo there repeat the murmuring sound of the palmists, which grow on their elevated stalks, and whose long arrow-formed branches are seen always balanced by the winds.

A mild light illuminates the cavity of this bason, into which the rays of the sun descend only at noon-day; but from the dawning of Aurora, they strike upon the brim of of it, the peaks of which, rising above the shadows of the mountain, present the appearance of gold and purple on the azure of the heavens.

I took pleasure in retiring to this place, where you can enjoy at once an unbounded prospect, and a profound solitude. One day, as I was sitting by the platform of these cottages, and contemplating their ruins, a man considerably advanced into the vale of years happened to pass that way. He was dressed conformably to the custom of the ancient inhabitants in a short jacket and long trowsers. He walked bare-footed, and supported himself on a staff of ebony wood. His hair was completely white, his physiognomy simple and majestic. I saluted him respectfully. He returned my salute, and having eyed me for a moment,

ne approached, and sat down on the hillock where I had taken my station.

Encouraged by this mark of confidence, I took the liberty of addressing him in these words: "Can you inform me, father, to whom those two cottages belonged? "My son," replied he, "these ruins, and that now neglected spot of ground, were inhabited about twenty years ago by two families, which there found the means of true happiness. Their history is affecting: but in this island, situated on the road to India, what European will deign to take an interest in the destiny of a few obscure individuals? Nay, who would submit to live here, though in happiness and content, if poor and unknown? Men are desirous of knowing only the history of the great, and of kings, which is of no use to any one." "Father," replied I, "it is easy to discern from your air, and your style of conversation, that you must have acquired very extensive experience. If you leisure permits, have the goodness to relate me, I beseech you, what you know of the ancient inhabitants of this desert; and be assured that there is no man, however depraved by the prejudices of the world, but who loves to hear of the felicity which nature and virtue bestow."

Upon this, like one who is trying to recollect certain particular circumstances, after having applied his hands for some time to his forehead, the old man related what follows.

"In the year 1735, a young man of Normandy, called De la Tour, after having to no purpose solicited employment in France, and looked for assistance from his family, determined to come to this island in the view of making his fortune. He brought along with him a young wife whom he passionately loved, and who returned his affection with mutual ardour. She was descended from an ancient and opulent family of her province; but he had married her privately, and without a portion, because her relations opposed their union on account of the obscurity of his birth.

"He left her at Port Louis, in this island, and embarked for Madagascar in the hope of there purchasing some negroes, and of immediately returning hither for the purpose of fixing his residence. He disembarked at Madagascar during the dangerous season, which commences about the middle of October, and soon after his arrival died of the pestilential fever, which rages for six months of the year, and which always will prevent European nations from forming settlements on that island.

The effects which he had carried with him were embezzled after his death, as generally happens to those who die in foreign countries. His wife, who had remained in the Isle of France, found herself a widow, pregnant, and destitute of every earthly resource except a negro woman, in a country where she was entirely unknown. Being unwilling to solicit assistance from any man, after the death of him who was the sole object of her affection, her misfortunes gave her courage. She resolved to cultivate with the help of her slave, a small spot of ground, in order to procure the means of subsistence.

In an island almost a desert, the soil of which was unappropriated, she did not choose the most fertile district of the country, nor that which was the most favorable for commerce; but looking about for some sequestered cove of the mountain, some hidden asylum, where she might live secluded and unknown, she found her way from the city to these rocks, into which she slunk as into a nest.

It is an instinct common to all beings possessed of sensibility, under the pressure of calamity, to seek shelter in places the wildest and most deserted; as if rocks were bulwarks against misfortune, or as if the calmness of Nature could compose the troubles of the soul. But Providence which comes to our relief when we aim only at necessary comforts, had in store for Madame de la Tour a blessing which neither riches nor grandeur can purchase; and that blessing was a friend.

In this place for a year past had resided a sprightly,

good and sensible women, called Margaret. She was born in Brittany, of a plain family of peasants, by whom she was beloved, and who would have rendered her happy, had she not been weak enough to repose confidence in the professions of love of a man of family in the neighborhood, who had promised to marry her; but who, having gratified his passion, abandoned her, and even refused to secure to her the means of subsistence for the child with which he had left her pregnant.

She immediately resolved for ever to quit the village where she was born, and to conceal her frailty in the Colonies, far from her country, where she had lost the only dowry of a poor and honest young woman, reputation. An old black fellow, whom she had purchased with a poor borrowed purse, cultivated with her a small corner of this district.

Madame de la Tour, attended by her black woman, found Margaret in this place, who was suckling her child. She was delighted to meet with a female in a situation which she accounted somewhat similar to her own. She unfolded, in a few words, her former condition, and her present wants. Margaret, on hearing Madame de la Tour's story, was moved with compassion, and wishing to merit her confidence rather than her esteem, she confessed to her without reserve the imprudence of which she had been guilty: 'For my part,' said she, 'I have merited my destiny, but you Madam——, virtuous and unfortunate!'

Here with tears in her eyes, she tendered to the stranger the accommodations of her cottage, and her friendship.

Madame de la Tour, deeply affected with a reception so tender, folded her in her arms, exclaiming, 'I see that God is going to put an end to my sufferings, since he has inspired you with sentiments of greater kindness to me, an entire stranger, than I ever received from my own relations.'

I had the felicity of Margaret's acquaintance; and though I live at the distance of a league and a half from

hence, in the woods, behind the long mountain, I looked upon myself as her neighbor. In the cities of Europe, a street, a simple partition separates the members of the same family for years; but in the new colonies, we consider as neighbors those who are only separated from us by woods and by mountains. At that time particularly, when this island had little commerce with India, neighborhood alone was a title to friendship, and hospitality to strangers was considered as a duty and a pleasure.

As soon as I learned that my neighbor had got a companion, I went to see her, in order to offer to both all the assistance in my power. I found in Madame de la Tour, a person of a very interesting figure; majestic and melancholy.

She was then very near her time. I said to these two ladies, that it would be better, for the sake of the interests of their children, and especially to prevent the establishment of any other settler, to divide between them the territory of this bason, which contains about twenty acres. They entrusted me with the care of making this division; I formed it into two portions nearly equal.

The one contained the upper part of that enclosure, from yonder point of the rock covered with clouds, from whence issues the source of the river of the Lataniers, to that steep opening which you see at the top of the mountain, and which is called the Embrazure, because it actually resembles the parapet of a battery. The bottom of this spot of ground is so filled with rocks and gutters, that it is scarcely possible to walk along. It nevertheless produces large trees, and abounds with fountains and little rivulets. In the other portion, I comprised all the lower part of the enclosure, which extends along the river of the Lataniers, to the opening where we now are, from whence the river begins to flow between two hills toward the sea. You there see some stripes of meadow-ground, and a soil tolerably smooth and level, but which is very little better than the other; for in the rainy season it is

marshy, and in drought stiff as lead. When you wish in that case to open a treach, you are obliged to cut it with a hatchet.

After having made these two divisions, I persuaded the ladies to settle their respective possessions by casting lots. The upper part fell to the share of Madame de la Tour, and the lower to Margaret. They were both perfectly satisfied; but requested me not to separate their habitations, 'in order,' said they to me, 'that we may always have it in our power to see, to converse with, and to assist each other.' It was necessary however that each of them should have a separate retreat. The cottage of Margaret was built in the middle of the bason, exactly upon the boundary of her own domain. I built close to it, upon that of Madame de la Tour, another cottage; so that these two friends were at once in the vicinity of each other, and on the property of their families.

I myself cut palisadoes in the mountain, and brought the leaves of the Latanier from the sea-side, to construct these two cottages, which now no longer present either door or roof. Alas! there still remains but too much for my recollection. Time which destroys with so much rapidity, the monuments of empires, seems to respect in these deserts those of friendship, in order to perpetuate my affliction to the last hour of my life.

Scarcely was the second of the cottages completed when Madame de la Tour was delivered of a daughter. I had been the god-father of Margaret's child, who was called Paul. Madame de la Tour begged me to name her daughter also, in conjunction with her friend who gave her the name of Virginia. 'She will be virtuous,' said she, 'and she will be happy; I knew calamity only in ceasing to be virtuous.'

When Madame de la Tour was recovered of her lying-in, these two little habitations began to wear the appearance of comfort, with the assistance of the labour which I occasionally bestowed upon them; but particu-

larly by the assiduous labour of their slaves; that of Margaret, called Domingo, was an Iolof Black, still robust though rather advanced in life.

He possessed the advantage of experience and good natural sense.

He cultivated, without distinction, on the two districts, the soil which appeared to him the most fertile, and there he sowed the seeds which he thought would thrive the best in it. He sowed small millet and Indian corn in places where the the soil was of an inferior quality, and a little wheat where the ground was good. In marshy places he sowed rice, and at the foot of the rocks were raised giraumonts, gourds, and cucumbers, which delight in climbing up their sides: in dry places, he planted potatoes, which there acquire singular sweetness; cotton-trees on heights, sugar-canes on strong land; coffee-plants on the hills, where their grains are small, but of an excellent quality; along the river, and around the cottages, he planted bananas, which all the year round produce large supplies of fruit, and form a beautiful shelter; and finally some plants of tobacco, to soothe his own cares and those of his good mistresses. He went to cut wood for fuel in the mountain, and broke down pieces of rock here and there in the plantation, to smooth the roads. He performed all these labours with intelligence and activity, because he performed them with zeal. He was very much attached to Margaret, and not much less so to Madame de la Tour, whose slave he had married at the birth of Virginia. He passionately loved his wife, whose name was Mary. She was a native of Madagascar, from whence she had brought some degree of skill, particularly the art of making baskets, and stuffs called pagnes, with the grass which grows in the woods. She was clever, cleanly, and what was above all, incorruptibly faithful. Her employment was to prepare the victuals, to take care of some poultry, and to go occasionally to Port Louis to sell the superfluity of the two plantations; this however was

very inconsiderable. If to these you add two goats brought up with the children, and a great dog that watched the dwellings during the night, you will have an idea of all the possessions and of all the domestic economy of these two little farms.

As for the two friends, they spun cotton from morning till night. This employment was sufficient to maintain themselves and their families; but in other respects they were so ill provided with foreign commodities, that they walked bare-footed when at home, and never wore shoes except on Sundays when they went to mass early in the morning, at the church of Pamplemousses which you see in the bottom.

It is nevertheless much further than to Port Louis; but they seldom visited the city, for fear of being treated with contempt, because they were dressed in the coarse blue linen cloth of Bengal which is worn by slaves. After all, is public respectability half so valuable as domestic felicity?

If these ladies were exposed to a little suffering when abroad, they returned home with so much more additional satisfaction. No sooner had Mary and Domingo perceived them from this eminence, on the road from Pamplemousses, than they flew to the bottom of the mountain, to assist them in re-ascending it. They read in the eyes of their slaves the joy which they felt at seeing them again. They found in their habitation cleanliness and freedom, blessings which they owed entirely to their own industry, and to servants animated with zeal and affection. As for themselves, united by the same wants, having experienced evils almost similar, giving to each other the tender names of friend, companion and sister, they had but one will, one interest, one table. They had every thing in common. And if it sometimes happened that former sentiments, more ardent than those of friendship, were re-kindled in their bosoms, a pure and undefiled Religion, assisted by chaste manners, directed them

toward another life, like the flame which flies off to Heaven when it ceases to find nourishment on the earth.

The duties of nature were besides an additional source of happiness to their society. Their mutual friendship redoubled at the sight of their children, the fruits of a love equally unfortunate. They took delight to put them into the same bath, and lay them to sleep in the same cradle. They frequently exchanged their milk to the childreu; 'My friend,' said Madame de la Tour, 'each of us will have two children, and each of our children will have two mothers.' Like two buds which remain upon two trees of the same species, all the branches of which have been broken by the tempest, produce fruits more delicious, if each of them, detached from the maternal stock, is grafted on the neighbouring stem; thus these two little children, deprived of their relations, were filled with sentiments toward each other more tender than those of son and daughter, of brother and sister, when they were exchanged at the breast by the two friends who had given them being.

Already their mothers talked of their marriage, though they were yet in the cradle, and this prospect of conjugal felicity, with which they soothed their own woes to peace, frequently terminated in a flood of tears; the one recollecting the miseries which she had suffered from having neglected the forms of marriage and the other from having submitted to its laws; the one from having been raised above her condition; and the other from having descended below hers; but they consoled themselves with the thought that the day would come, when their children, more fortunate than themselves, would enjoy at once, far from the cruel prejudices of Europe, the pleasures of love and the happiness of equality.

Nothing indeed was to be compared with the attachment which the babes betimes testified for each other: If Paul happened to complain, they shewed Virginia to him; at the sight of her he smiled and was pacified

if Virginia suffered, you were informed of it by the lamentations of Paul; but this amiable child immediately concealed her pain, that her sufferings might not distress him.

. never arrived here, that I did not see them both entirely naked, according to the custom of the country, scarcely able to walk, holding each other by the hands, and under the arms, as the constellation of the Twins is represented. Night itself had not the power of separating them; it frequently surprised them, laid in the same cradle, cheek joined to cheek, bosom to bosom, their hands mutually passed round each other's neck, and asleep in one another's arms.

When they were able to speak, the first names which they learned to pronounce was that of brother and sister. Infancy, which bestows caresses more tender, knows of no names more sweet. Their education only served to redouble their friendship, by directing it towards their reciprocal wants. Very soon every thing that concerned domestic economy, cleanliness, the care of preparing a rural repast became the province of Virginia, and her labours were always followed by the praises and caresses of Paul.

As for him, ever in motion, he digged in the garden with Domingo, or with a little hatchet in his hand followed him into the woods; and if in these rambles a beautiful flower, a delicious fruit, or a nest of birds, came in his way, though at the top of the highest tree, he scaled it to bring them to his sister.

When you chanced to meet one of them, you might be certain the other was not far off. One day that I was descending from the summit of this mountain, I perceived Virginia at the extremity of the garden; she was running toward the house, her head covered with her petticoat, which she had raised behind, to shelter her from a deluge of rain.

At a distance I thought she had been alone: and ha

ing advanced to assist her, I perceived that she held Paul by the arm, who was almost enveloped in the same covering; both of them delighted at finding themselves sheltered together under an umbrella of their own invention. These two charming heads, wrapt up in the swelling petticoat, reminded me of the children of Leda enclosed in the same shell.

All their study was to please and to assist each other; in every other respect they were as ignorant as Creoles, and neither knew how to read or write. They did not disturb themselves about what had happened in former times, and at a distance from them; their curiosity did not extend beyond this mountain. They believed that the world ended at the extremity of their island, and they could not form an idea of any thing beautiful where they were not. Their mutual affections and that of their mothers engaged every feeling of their hearts: never had useless science caused their tears to flow; never had the lessons of a gloomy morality oppressed them with languor. They knew not that it was unlawful to steal, every thing with them being in common; nor to be intemperate, having always at command plenty of simple food: nor to utter falsehood, having no truths that it was necessary to conceal. They had never been terrified with the idea that God has in store dreadful punishments for ungrateful children; with them filial duty was born of maternal affection: they had been taught no other religion than that which instructs us to love one another; and if they did not offer up long prayers at church, wherever they were, in the house, in the fields, or in the woods, they raised toward heaven innocent hands and pure hearts, filled with the love of their parents.

Thus passed their early infancy, like a beautiful dawn which seems to promise a still more beautiful day. They already divided with their mothers the cares of the household: as soon as the crowing of the cock announced the return of Aurora, Virginia rose, went to draw water at the neigh

boring fountain, and returned to the house to prepare breakfast. Soon after when the sun had gilded the peaks of that enclosure, Margaret and her son went to the dwelling of Madame de la Tour, where they immediately began a prayer, which was followed by their first repast.

This they frequently partook of before the door seated on the grass, under a bower of bananas, which furnished them at the same time with ready-prepared food, in their substantial fruit, and table-linen in their long and glittering leaves.

Wholesome and plentiful nourishment rapidly expanded the bodies of these young persons, and a mild education painted in their physiognomies the purity and contentment of their souls. Virginia was only twelve years old; already her person was more than half formed; a large quantity of beautiful flaxen hair ornamented her head; her blue eyes and coral lips shone with the mildest lustre on the bloom of her countenance: they always smiled in concert when she spoke, but when she was silent, their natural obliquity toward Heaven gave them an expression of extreme sensibility, and even a slight tendency to melancholy.

As for Paul, you might already see in him the character of a man, possessing all the graces of youth, his figure was taller than that of Virgina, his complexion darker, and his nose more aqualine: his eyes, which were black, would have possessed a certain degree of haughtiness, if the long eye-lashes which surrounded them, and which resembled the fine strokes of a pencil, had not given them the greatest sweetness.

Though he was almost continually in motion, the moment his sister appeared he became tranquil, and seated himself beside her; their meal frequently passed without a word being uttered: their silence, the simplicity of their attitudes, the beauty of their naked feet, would have tempted you to believe that you beheld an antique group of white marble, representing the children of Niobe: but

when you beheld their looks, which seemed desirous to meet each other, their smiles returned with smiles still sweeter, you would have taken them for those children of Heaven, those blessed spirits whose nature is love; and who have no need of thought to make their feelings known, nor of words to express their affection.

In the mean time, Madame de la Tour perceiving that her daughter advanced in life with so many charms, felt her uneasiness increase with her tenderness: she used to say sometimes to me. 'If I should chance to die, what would become of Virginia, dowerless as she is?'

She had an aunt in France, a woman of quality, rich, old, and a devotee, who had refused her assistance in a manner so unfeeling, when she married De la Tour, that she resolved never to have recourse to her again, to whatever extremity she might be reduced.

But now that she was become a mother, she no longer dreaded the shame of a refusal: she acquainted her aunt with the unexpected death of her husband, the birth of her daughter, and the embarrassment of her affairs; being destitute of support, and burdened with a child. She however received no answer; but, being a woman of exalted character, she no longer feared humiliation, nor the reproaches of her relation, who had never forgiven her for having married a man of low birth, though virtuous. She continued therefore to write her aunt by every opportunity in the hope of raising in her breast some favorable emotions toward Virginia: many years however elapsed before she received from her any token of remembrance.

At length, in the year 1746, on the arrival of M. de la Bourdonaye, Madame de la Tour was informed that their new governor had a letter to deliver from her aunt.

She immediately ran to Port Louis, for this once entirely indifferent about appearing in her coarse habit; maternal love raising her above respect to the world. M. de la Bourdonaye delivered her aunt's letter, which insinuated that she merited her condition for having married

an adventurer, a libertine; that the passions always carried their punishment along with them; that the untimely death of her husband was a just chastisement of God, that she had done well to remain in the island, instead of dishonoring her family by returning to France; and that after all she was in an excellent country, where every body made fortunes, except the idle.

After having thus reproached her, she concluded with making her own eulogium: to avoid, she said, the almost inevitable evils which attend matrimony, she had always refused to marry: the truth was, that being very ambitious, she had refused to unite herself to any except a man of rank; but although she was very rich, and that at court every thing is a matter of indifference, fortune excepted, yet no person was found willing to form an alliance with a woman homely to the last degree, and at the same time possessed of a most unfeeling heart.

She added by way of postcript, that every thing considered, she had strongly recommended her to M. de la Bourdonaye: she had indeed recommended her, but, conformably to a custom but too prevalent at this day, which renders a protector more to be dreaded than a declared enemy, in order to justify to the governor her severity to her niece, in feigning to pity she had calumniated her.

Madame de la Tour, who could not be seen by the most indifferent person without interest and respect, was received with the greatest coolness by M. de la Bourdonaye, thus prejudiced against her. To the account which she gave of her own situation, and that of her daughter, he answered only by harsh monosyllables; 'I shall enquire,' —'we shall see,'—'in time,'—'there are many unhappy people,'—'why offend so respectable an aunt?'—'you are certainly to blame.'

Madame de la Tour returned to the plantation, her heart oppressed with grief, and full of bitterness; on her arrival she sat down, threw her aunt's letter on the table, and said to her friend, 'behold the fruits of eleven yea.

patience.' But as no one of the society knew how to read except Madame de la Tour, she took up the letter again and read it to all the family. Scarcely had she concluded, when Margaret said to her with vivacity, 'what need have we of thy relations? Has God forsaken us? He only is our father; have we not lived happily until this day? Why then should you afflict yourself? You have no fortitude.'

Perceiving that Madame de la Tour was much affected, she threw herself on her bosom, folded her in her arms and exclaimed, 'my dear friend, my dear friend!' her own sobs quite choaked her voice. At this sight, Virginia melting into tears, alternately pressed the hands of her mother, and of Margaret, to her lips, and to her heart; whilst Paul, his eyes inflamed with rage, exclaimed aloud, clenched his fists, stamped with his feet, not knowing how to vent his rage.

At the noise which he made Domingo and Mary ran in, and nothing but exclamations of distress were heard in the cottage: 'Ah, Madam!'—'My good mistress!'—'my dear mother!'—'Do not distress yourself.' Such tender marks of affection soon dissipated the anguish of Madame de la Tour: she embraced Paul and Virginia, and said to them with a look of satisfaction, 'my dear children, you are the cause of my tears, but you are also the source of all the happiness I enjoy: Oh, my children, misfortune attacks me only from afar, felicity is ever around me.'

Paul and Virginia did not comprehend what she said, but as soon as they saw that she was composed they smiled and caressed her.

Thus was peace restored, and the past scene was only like a stormy cloud in the midst of summer.

The good dispositions of these children were unfolding themselves from day to day.

One Sunday about sun-rise, their mothers having gone to the first mass at the church of Pamplemousses, a fugitive negro-woman made her appearance, under the bananas

which surrounded their plantations. She was as meagre as a skeleton, and without a bit of clothing except a shread of tattered canvas about her loins.

She threw herself at Virginia's feet, who was preparing the family breakfast, and thus addressed her.

'My dear young lady, take pity on a miserable runaway slave: for more than a month past I have been wandering about these mountains, half-dead with famine, and frequently pursued by the huntsmen and their dogs. I have fled from my master, who is a wealthy planter on the Black River: he has treated me in the manner you see.'

In saying these words, she shewed her body deeply furrowed by the strokes of the whip which she had received; she added, 'I had thoughts of drowning myself, but knowing that you lived here, I thus reflected; perhaps there are still some good white people in this country, I must not die yet.

Virginia much affected, replied, 'take comfort unfortunate creature! eat, eat; upon which she gave her the breakfast which she had prepared for the family. The slave in a few moments devoured the whole of it. Virginia, seeing her refreshed, said, 'poor wretch! I have a great desire to go to your master and implore your pardon: at the sight of you he must be touched with compassion: will you conduct me to him? 'Angel of God!' replied the negress, 'I will follow you wherever you lead me.'

Virginia called her brother, and entreated him to accompany her: the fugitive slave conducted them by narrow paths to the middle of the woods, across high mountains over which they scrambled with difficulty, and great rivers, which they forded.

At length, toward noon, they arrived at the bottom of a mountain on the banks of the Black River. They there perceived a well built-house, considerable plantations, and a great number of slaves engaged in different occupations. The master was walking in the midst of them, with pipe in his mouth, and a cane in his hand He w-

very tall, lean man, of an olive complexion, with his eyes sunk in his head, his eye-brows black and meeting each other.

Virginia, quite petrified, holding Paul by the arm, approached the man, and entreated him for the love of God to pardon his slave, who was a few paces behind them.

The master, at first, did not pay much attention to these two children, who were but meanly clad: when however he had remarked the elegant form of Virginia, her beautiful flaxen hair, which appeared from under a blue hood, and when he had heard the sweet tones of her voice, which trembled as well as her body while she implored his forgiveness, he took the pipe from his mouth, and raising his ratan toward Heaven, declared with a terrible oath that he would pardon his slave, not for the love of God, but for the love of her.

Virginia immediately made a sign for the slave to advance toward her master, and then ran away, with Paul running after her.

They scrambled together up the steep declivity of the mountain, by which they had descended in the morning, and having arrived at its summit, they seated themselves under a tree, exhausted with fatigue, hunger and thirst.

They had travelled from the rising of the Sun, more than five leagues, without having tasted food: Paul addressed Virginia thus: 'Sister, it is past mid-day, you are hungry, you are thirsty; we shall find no refreshment here, let us again descend the mountain, and request the master of the slave to give us something to eat.'

'Oh, no! my friend,' replied Virginia, 'he has terrified me too much already. Do you not remember what mamma has often said; the bread of the wicked fills the mouth with gravel?'

'What shall we do then?' said Paul, 'these trees produce only bad fruits: there is not so much as a tamarind, or a lemon to refresh you.'

"God will have pity on us" returned Virginia, "he hears the voice of the little birds which call to him for food." Scarcely had she pronounced these words when they heard the bubbling of a fountain which fell from a neighboring rock; they immediately ran to it, and after having quenched their thirst with water more clear than crystal, they gathered and eat a few of the cresses which grew upon its banks. As they were anxiously looking about from side to side, to see if they could not find some more substantial food, Virginia perceived among the trees of the forest a young palm-tree. The colewort which is inclosed in the leaves that grow on the top of this tree is very good to to eat; but though its trunk was not thicker than a man's leg, it was more than sixty feet high. The wood of this tree indeed is only formed of a bundle of filaments, but its pith is so hard that it resists the edge of the keenest hatchet, and Paul had not so much as a knife. The idea occured to him of setting fire to the palm-tree, but here again he was at a loss; he had no steel; and besides in this island, so covered with rock, I do not believe that a single flint stone is to be found. Necessity produces industry, and the most useful inventions are frequently to be ascribed to the most miserable of mankind.

Paul resolved to kindle a fire in the same manner that the blacks do. With the sharp point of a stone he bored a little hole in the branch of a tree that was very dry, which he mastered by pressing it under his feet; he then, with the edge of this stone, made a point to another branch equally dry, but of a different species of wood. Afterwards he applied this piece of pointed wood to the little hole of the branch which was under his feet, and spinning it round with great rapidity between his hands, as you trundle round the mill with which chocolate is frothed up, in a few moments he saw smoke and sparks issue from the point of contact. He then gathered together some dry herbage, and other branches of trees, and applied the fire to the root of the palm tree, which presently fell with

a terrible crash. This fire likewise assisted him in peeling off from the colewort its long ligneous and prickly leaves.

Virginia and he ate a part of his cabbage raw, and the other part dressed upon the ashes, and found them equally savoury. They enjoyed this frugal repast with the highest satisfaction, from the recollection of the good action which they had performed in the morning; but their joy was greatly damped by the uneasiness which they had not a doubt their long absence must have occasioned to their parents. Virginia recurred frequently to this subject, while Paul, who now felt his strength restored, assured her that it would not be long before they got home to quiet the anxiety of their mothers. After dinner they found themselves much embarrassed, for they had no longer a guide to direct them homewards. Paul, who was disconcerted at nothing, said to Virginia, "Our cottage looks toward the noon-day sun, we must therefore pass as we did this morning, over that mountain which you see below with its three peaks. Come, let us walk on, my friend." This mountain is called the Three Paps,* because its three peaks have that form.

They descended then the gloomy declivity of the Black River toward the north, and arrived, after an hour's walking, at the banks of a considerable river which barred their progress. That large portion of the island, entirely covered, is so little known even at this day, that many of its rivers and mountains are still without a name. The river, upon the banks of which they were, flows impetuously over a bed of rocks. The noise of its waters terrified Virginia; she durst not venture to put her feet into it for the purpose of fording over. Paul upon this

* There are many mountains, the summits of which are rounded into the form of a woman's breast, and bear that name in all languages. They are indeed real paps, for from them issue multitudes of brooks and rivers, which diffuse abundance over the face of the earth. They are the source of the principal streams which water it, and furnish them with a constan supply, by continually attracting the clouds around the peak of the rock which overtops them at the centre, like a nipple.

took Virginia on his back; and thus laden passed over the slippery rocks of the river, in spite of the tumult of the waves. "Be not afraid," said he to her, "I feel my strength renewed, having the charge of you. If the planter of the Black River had refused to your entreaties the pardon of his slave, I should have fought with him. "How!" exclaimed Virginia, "with that man, so large, and so wicked? To what have I exposed you? My God! how difficult a thing it is to act properly! Evil alone is performed with facility!"

When Paul had arrived on the farther side he was desirous of continuing the journey, laden as he was with the weight of his sister, and he flattered himself that he should be able to ascend the mountain of the Three Paps, which he saw before him at the distance of a league and a half, under the same burden with which he had crossed the river; but his strength very soon failed, and he was obliged to set her on the ground, and repose himself by her side.

Virginia then said to him, "Brother, the day is declining fast, you have still some strength remaining, but mine entirely fails; suffer me to remain here, and do you return alone to our cottage to restore tranquillity to our mothers." "Oh, no!" said Paul, "I will never leave you. If the night should surprise us in these woods, I will light a fire, I will fell these palm trees, you shall eat the colewort, and I will make of its leaves an ajoupa to shelter you." Virginia however being a little revived, gathered from the trunk of an old tree which grew upon the edge of the river, long leaves of the scolopendra, which hung down from its boughs. She made of these a species of sandals, which she put upon her feet, for they were wounded to bleeding by the sharp stones which covered the road; in her eagerness to do good she had forgot to put on shoes.

Feeling herself relieved by the freshness of these leaves, she broke off a branch of bamboo, and proceeded on her journey, resting one hand on this reed, and the other on

her brother. Thus they walked slowly on through the woods; but the height of the trees, and the thickness of their foliage, soon made them loose sight of the Three Paps, to which they were directing their course, and even of the sun, which was near setting. After some time they strayed, without perceiving it, from the beaten path which they had hitherto pursued, and found themselves in a labyrinth of trees, of lianes, and of rocks, which had no outlet. Paul made Virginia sit down, and ran about quite distracted, in quest of a road that might lead them out of this maze, but he fatigued himself in vain. He scrambled to the top of a large tree, with the hope of discovering at least the mountain of the Three Paps, but he could perceive nothing around him except the summits of trees, some of which were gilded by the last rays of the setting sun. In the mean time, the shadow of the mountains had already covered the forests in the valleys; the wind was hushed, as it usually is at the setting of the sun; a profound silence reigned in these solitudes, and no other sound was to be heard, but the braying of the deer, which came to seek a place of repose for the night in these wild retreats. Paul, in the hope that some huntsman might hear his voice, then called out with all his might; "Come, come to the relief of Virginia:" but the only answer he received was from the solitary echoes of the forest, which repeated at intervals, "Virginia! Virginia!"

Paul at length descended from the tree, oppressed with fatigue and vexation; he meditated on the means of passing the night in this place; but there was neither fountain nor palm-tree to be found in it; nor even so much as branches of dry wood proper to kindle a fire.

He then felt from experience the inefficacy of his resources, and began to weep.

Virginia said to him, 'Do not distress yourself, my friend, if you would not wish to see me overwhelmed with grief. It is I who am the cause of all your sufferings, and of those which our mothers now endure. We ought to

do nothing without consulting our parents, no, not even what is right. Oh! I have been very imprudent!'

Thus saying, she burst into tears. In the mean time she said to Paul, 'Let us pray to God, my brother, and he will take compassion on us.' Scarcely had they finished their prayer when they heard a dog bark.

'It is,' said Paul, 'the dog of some huntsman, who comes of an evening to kill the deer in their retreat.'

A short time after the barking of the dog redoubled.

'I have an idea,' said Virginia, 'that it is Fidèle, our cottage dog: yes, I recollect his voice: Is it possible that we should be so near our journey's end, and at the foot of our own mountain?'

In truth, a moment afterwards, Fidèle was at their feet, barking, howling, groaning, and loading them with caresses. Before they had recovered from their surprise, they perceived Domingo, who was running toward them.

At the sight of this worthy negro, who wept with joy, they also shed tears, without being able to say one word.

When Domingo had a little recovered himself: 'Oh my young masters,' said he to them, 'what distress your mothers are in; how astonished they were at not finding you on their return from mass, whither I had accompanied them! Mary, who was at work in a corner of the plantation, could not tell whither you were gone: I wandered about the grounds, not knowing myself where to seek you: at length, I took the old clothes which you used to wear*; I made Fidèle smell to them; and as if the poor animal understood me, he immediately set off to trace your steps. He conducted me, always wagging his tail, to the Black River. There I was informed by

* This trait of sagacity in the black Domingo, and his dog Fidele, very much resembles that of the savage Tewenisse and his dog Oniha, mentioned by M. de Crevecœur, in his humane work, entitled, *Letters of American Farmer*.

planter that you had brought a fugitive slave back to him, and that he pardoned her at your intercession.

'But what a pardon! he showed her to me, fastened with a chain round her foot to a log of wood, and an iron collar with three rings round her neck. From thence, Fidèle following the scent, conducted me to the Mount of the Black River, where he again stopped, and barked as loud as he was able.

'It was on the brink of a fountain near a palm-tree which had been levelled, and a fire not quite extinguished; at length he conducted me to this place. We are at the foot of the mountain of the Three Paps, and it is still four good leagues from our dwelling. Come on, eat and recruit your strength.'

He then presented to them a cake, some fruit, and a large gourd bottle filled with a liquor compounded of water, wine, lemon-juice, sugar, and nutmeg, which their mothers had prepared to strengthen and revive them.

Virginia sighed at the recollection of the poor slave, and at the distress of their mothers. She repeated several times, 'Oh, how difficult it is to do good.'

While Paul and she were refreshing themselves, Domingo lighted a fire, and looking about among the rocks for a crooked billet, which we call round-wood, and which burns even in the sap, throwing out a very bright flame, he made a flambeau of it, and set it a burning; for it was now quite dark. But he had to encounter a much greater difficulty.

When all was ready for proceeding forward, Paul and Virginia were absolutely incapable of walking any farther; their feet being swelled and raw all over.

Domingo was completely puzzled; he could not determine whether it would be more adviseable for him to ramble about in quest of assistance, or to prepare for passing the night with them where they were.

'Whither has the time fled,' said he to them, '

I carried you both at once in my arms? But now you are increased in stature, and I am old.'

While he was reduced to this state of perplexity, a company of run-away negroes appeared, about twenty paces distant.

The leader of the troop, approaching Paul and Virginia, thus addressed them: 'Good little whites, be not afraid; we saw you this morning passing along in company with a negress of the Black River; you were going to solicit her pardon of a cruel master; out of gratitude we will carry you home upon our shoulders.'

Upon this he made a sign, and four of the stoutest black fellows immediately formed a litter with boughs of trees and lianes, placed Paul and Virginia upon it, hoisted them upon their shoulders, and, Domingo marching before them with his flambeau, they took the road amidst the joyful acclamations of the whole company, who loaded them with benedictions.

Virginia, quite overcome, whispered to Paul: 'Oh, my dear friend! God never permits a good action to go unrewarded.'

About midnight they arrived at the bottom of their own mountain, the ridges of which were illuminated with various fires.

Scarcely had they got to the top, when they heard voices calling aloud: 'Is it you, my children?' The blacks and they replied together, 'Yes, yes, here we are!' and presently they perceived their mothers and Mary coming to meet them with flaming torches.

'Unhappy children!' exclaimed Madame de la Tour Whence come you? Into what agonies have you thrown us!'

'We come,' replied Virginia, 'from the Black River whither we went this morning to implore the pardon o a poor fugitive negress, to whom I likewise gave the family breakfast, for she was just perishing with hunger; and here, the black run-aways have carried us home again.'

Madame de la Tour tenderly embraced her daughter, utterly deprived of the power of speech; and Virginia, who felt her own face moistened with her mother's tears, said to her: 'How you repay me for all that I have suffered!'

Margaret, transported with delight, locked Paul in her arms, saying: 'And thou too, my son, thou hast performed a good action!'

Being arrived at their cottage with the children, they gave a plentiful supper to the black guides, who returned to the woods expressing a thousand good wishes for their prosperity.

Every succeeding day was to these families a day of happiness and tranquillity. They were strangers to the torments of envy and of ambition. They coveted not, from abroad, that vain reputation which is purchased by intrigue, and which the breath of calumny destroys. It was sufficient for them to be in the place of witness and of judge to each other. In this island where, as in all the European Colonies, no curiosity is expressed except in hunting after malicious anecdotes, their virtues, nay their very names, were unknown. Only when a passenger happened to ask on the road to Pamplemousses, of one of the inhabitants of the plain: 'Who lives in yonder 'cottages on the top of the hill?' the answer returned, without pretending to any farther knowledge of them, was: 'They are good people.'

Thus the violets, from under the prickly shrubbery, exhale at a distance their fragrant perfume, though they remain unseen.

They had banished from their conversation the practice of evil-speaking, which under an appearance of justice, necessarily disposes the heart to hatred or to falsehood; for it is impossible to refrain from hating men if we believe them to be wicked; or to live with the wicked unless you conceal your hatred of them under false appearances of benevolence

Evil-speaking, accordingly, lays us under the necessit of being upon bad terms with others, or with ourselves. But without sitting in judgment on men, in particular they entertained one another only in devising the means of doing good to all in general; and though they possessed not the power, they had an invariable disposition this way, which animated them with a benevolence at all times ready to extend itself in an outward direction.

By living therefore in solitude, so far from degenerating into savages, they had become more humane. If the scandalous history of Society did not supply them with matter of conversation, that of nature replenished their hearts with transports of wonder and delight. They contemplated with rapture the power of that Providence which, by their hands, had diffused amidst these barren rocks abundance, gracefulness, pleasures pure, simple and perpetually renewing themselves.

Paul, at the age of twelve, more vigorous and more intelligent than Europeans in general are at fifteen, had embellished what the Negro Domingo only cultivated. He went with him to the adjoining woods, to take up by the roots the young plants of lemon and orange-trees, of the tamarinds, whose round head is of such a beautiful green, and of the attier, whose fruit is stored with a sugary cream which emits the perfume of the orange-flower.

He planted these trees, after they had attained a considerable stature, all around this enclosure. He had there sown the grains of such trees as, from the second year and upward, bear flowers or fruits, as the agpthis, from which depend circularly, like the crystal pendants of lustre, long clusters of white flowers; the Persian lilach which raises straight into the air its gray flaxen girandoles; the papayer, whose branchless trunk, formed like a column, bristled all over with green mellons, carries aloft a chapiter of broad leaves resembling those of the fig-tree.

He had likewise planted in it the kernels and the nuts of the badamier, of the mango, of the avocatier, of the

goyavier, of the jacqs, and of the jamrose. Most of these trees already yielded to their young master both shade and fruit.

His industrious hand had diffused fecundity even over the most sterile spot of the enclosure. Aloes of various kinds, the raquet, loaded with yellow flowers striped with red, the prickly tapers arose on the dusky summits of the rocks, and seemed desirous of mounting up to the lianes, garnished with blue or scarlet flowers, which hung down here and there along the precipices of the mountain.

He had disposed these vegetables in such a manner that you could enjoy the sight of them by a single glance of the eye. He had planted in the middle of the bason, the herbage, which grows to no great height; after that the shrubbery, then the trees of small stature, and last of all the great trees which garnished its circumference; so that this vast enclosure appeared, from its centre, like an amphitheatre of verdure, of fruits and flowers, containing pot-herbs, stripes of meadow-ground, and fields of rice and corn. But in subjecting thus the vegetable kingdom to his plan, he had not deviated from the plans of nature. Directed by the indications which she vouchsafes to give, he had placed in elevated situations the plants whose seeds are volatile, and by the side of the waters those whose grains are adapted to floating.

Thus each vegetable grew in its proper site, and each site received from its vegetable its natural dress. The streams, which descended from the summit of these rocks, formed below in the valley, here fountains, there broad and capacious mirrors, which reflected in the midst of the verdure, the trees in bloom, the rocks, and the azure of the Heavens.

Notwithstanding the great irregularity of the soil, these plantations were for the most part as accessible to the foot as to the eye. In truth, we all assisted him with our advice, and with our exertions, in order to accomplish his purpose.

He had traced a path which winded round the bason, and of which several ramifications converged from the circumference to meet at the centre. He had availed himself of the most rugged places of his domain, and united, by a harmony the most delicious, facility of walking with the asperity of the soil, and domestic, with forest trees.

Of that enormous quantity of rolling stones, which now obstruct these roads, as well as mar the greatest part of the surface of this island, he had formed in various places huge pyramids, in the layers of which he had mixed with earth, and the roots of rose trees, the poincillade and other shrubs which take pleasure in the rocks.

In a very short time, these gloomy and inanimate piles were covered with verdure, or with the dazzling lustre of the most beautiful flowers.

The cavities worn by the torrent in the sides of the mountain, bordered with aged trees inclined toward each other, formed arched subterraneans inaccessible to the heat, to which they retired for coolness during the sultry ardour of the meridian sun. A narrow path conducted into a thicket of wild trees, at the centre of which grew, sheltered from the winds, a household-tree loaded with fruit. There was a corn-field whitening to the harvest; here an orchard. Through this avenue you could see the houses; through that the inaccessible summits of the mountain. Under a tufted grove of tatamaques, interlaced with lianes, no one object was distinguishable even in the brightness of noon-day. On the point of that great rock adjoining, which juts out of the mountain, you could discern all those contained within the inclosure, with the sea at a distance, on which sometimes appeared a vessel arriving from Europe, or returning thither.

On this rock it was that the two families assembled of an evening, and enjoyed in silence the coolness of the air, the fragrance of the flowers, the bubbling of the fountains, and the last harmonies of light and shade.

Nothing could be more agreeable than the names imposed on the greatest part of the charming retreats of this labyrinth. The rock of which I have just now been speaking, from whence they could discern my approach at a considerable distance, was called Friendship's Discovery.

Paul and Virginia, in their sportiveness, had planted a bamboo upon it, on the summit of which they hoisted a small white handkerchief, as a signal of my arrival as soon as they perceived me; in imitation of the flag which is displayed on the neighboring mountain on seeing a vessel at sea. I took a fancy to engrave an inscription on the stem of this reed.

Whatever pleasure I may have enjoyed in the course of my travels, in contemplating a statue, or a monument of antiquity, I have enjoyed still more in perusing a well-conceived inscription.

It seems to me, in that case, as if a human voice issued out of the stone, made itself audable through the mighty void of ages, and addressing itself to man in the midst of deserts, told him that he was not alone; and that other men, in these very places, had felt, thought, and suffered like himself.

Should it happen to be the inscription of some ancient nation, which subsists no longer, it conveys our soul into the regions of infinity, and communicates to it the sentiment of its own immortality, by shewing that a thought has outlived the ruins even of an empire.

I inscribed then on the little mast which carried the flag of Paul and Virginia, these verses of Horace:

Fratres Helenæ, lucida sidera,
Ventorumque regat Pater,
Obstrictis aliis, præter lapyga.*

* Thus imitated:

May Helen's brothers, stars so bright,
And Æolus guide your course aright.
That, safe from every ruder gale,
Zephyrs alone may swell the sail.

May the brothers of Helen, stars radiant like yourselves, and may the ruler of the winds direct your course; binding up every ruder blast, and filling your sails only with the breath of the Zephyr.'

I engraved the following line from Virgil, on the rind of a tantamaque, under the shade of which Paul sometimes sat down to contemplate from afar the agitated ocean:

Fortunatus & ille deos qui novit agrestes.

Happy too is he in knowing no deities but those who make the plains their care!

And that over the door of Madame de la Tour's cottage, which was the place of general rendezvous:

At secura quies, & nescia fallera vita.
Peace undisturb'd, and hearts devoid of guile.

But Virginia did not approve of my Latin; she said that the inscription which I had placed below her weather-cock, was too long and too learned.

'I should have rather preferred this,' added she, 'always agitated, but ever constant.'

'That device,' replied I, 'is still better adapted to virtue.' My observation excited a blush in her cheek.

These happy families extended their benevolent dispositions to all that surrounded them. They bestowed the most tender appellations on objects apparantly the most indifferent. To an inclosure of orange-trees and bananas, planted in form of a circle round a portion of mossy ground, in the middle of which Paul and Virginia sometimes used to dance, they gave the name of 'The Concord.'

An ancient tree, under the shade of which Madame de la Tour and Margaret related to each other their misfortunes, was called 'the tears wiped away.'

They gave the names of 'Brittany and Normandy,' to small spots of ground where they had planted corn, strawberries and pease.

Domingo and Mary, wishing, after the example of their mistresses, to call to remembrance the places of their birth in Africa, denominated two pieces of ground where that grass grew of which they made baskets, and where they had planted a great gourd, 'Angola and Foullepointe.'

Thus by those productions of their own climates, these exiled families cherished fond ideas of their native country, and soothed their sorrows in a foreign land.

Alas! I have seen the trees, the fountains, the rocks, of this spot, now so changed, animated by a thousand charming appellations; but in their present state, like a Grecian plain, they only present to view ruins and heart-affecting inscriptions.

Of the whole inclosure however no spot was more agreeable than that which went by the name of 'Virginia's Rest.'

At the foot of the rock named 'The Discovery of Friendship,' is a hollow place whence issues a fountain, which forms from its source a little lake, in the middle of a meadow of fine grass.

When Margaret had brought Paul into the world, I made her a present of an Indian cocoa-nut which had been given me. She planted this fruit on the borders of the lake, intending that the tree which it should produce might serve one day as an epocha of her son's birth.

Madame de la Tour, after her example, planted another there likewise, with a similar intention as soon as she was delivered of Virginia.

From these nuts grew two cocoa-trees, which formed the whole archives of the two families; one was called the tree of Paul, the other that of Virginia.

They both grew in the same proportion as their young master and mistress, of a height rather unequal, but which surpassed at the end of twelve years that of the cottages. Already they interwove their branches, and dropped their young clusters of cocoas over the bason of the fountain.

This plantation excepted, they had left the cavity of the

rock just as nature had adorned it. On its brown and humid sides, radiated, in green and dusky stars, large plants of maiden hair, and tufts of the scolopendra, suspended like long ribands of greenish purple, waved at the pleasure of the winds.

Near to that grew long stripes of the periwinkle, the flowers of which nearly resemble those of the white gilly-flower, and pimentos, whose blood-colored husks are brighter than coral. Round about these the plants of balm, with their leaves resembling a heart, and basilicons, with a carnation smell exhaled the sweetest of perfumes.

From the summit of the rugged precipices of the mountain hung the lianes, like floating drapery, which formed on the sides of the rocks large festoons of verdure. The sea-birds, attracted by these peaceful retreats, flocked thither to pass the night.

At sun-set you might see the rook and the sea-lark fly along the shores of the sea; and high in air the black frigat and the white bird of the tropics, which abandon, together with the orb of day, the solitudes of the Indian Ocean.

Virginia delighted to repose herself on the borders of this fountain, decorated with a pomp at once magnificent and wild. Thither did she often resort to wash the linen of the family, under the shade of the cocoa-trees; and sometimes she led her goats to pasture there. While she prepared cheeses of their milk, she took delight to see them browse on the maiden hair which grew on the steep sides of the rock, and suspend themselves in the air on one of its cornices as on a pedestal.

Paul, perceiving this to be the favorite retreat of Virginia, brought thither from the neighboring forest the nests of all kinds of birds, the parents of these birds followed their young ones, and established themselves in this new colony. Virginia scattered among them from time to time grains of rice, of maize and of millet. As soon as

she appeared, the whistling black birds, the bengali whose warbling is so sweet, and the cardinal with his flame colored plumage, left the bushes; the paroquets, as green as the emerald, descended from the neighboring lataniers; the patridges ran nimbly along the grass; all hastened in variegated groups to her very feet, like little chickens, while Paul and she amused themselves with transport, at their playfulness, their appetites, and their loves.

Amiable children, thus did you pass your early days, in perfect innocence and employing yourselves in acts of virtue! How many times, in that spot, did your mothers, folding you in their arms, give thanks to Heaven for the consolation which you were preparing for their old age, and at seeing you enter into life under auspicies so happy

How many times under the shadow of these rocks, have I partaken with them your rural repast, by which no animal was deprived of life!

Gourds filled with milk, fresh eggs, cakes of rice served up on the leaves of the banana-tree, baskets filled with potatoes, mangoes, oranges, pomegranates, bananas, attés, and pine-apples, presented at once the most nourishing aliment, the gayest colors and the most agreeable juices. Their conversation was as sweet and as innocent as their repast. Paul frequently talked of the labors of the day past, and those of to-morrow; he was always meditating something which would be subservient to the general good: here the paths were not commodious; there they were indifferently seated, these young bowers did not give a sufficient shade; Virginia would be more comfortable in another place.

In the rainy season, in the day-time, they assembled all together in one of the cottages, masters and servants, and employed themselves in weaving mats of the herbage, and baskets of bamboo.

You saw displayed, in the most perfect order, along the boards of the wall, rakes, hatchets, spades, and close by these instruments of agriculture, the productions which

re the fruit of them, bags of rice, sheaves of corn, and rows of bananas. Delicacy was there ever blended with abundance.

Virgina, assisted by the instructions of Margaret and her mother, amused herself with preparing sherbets and cordials, with the juice of the sugar-cane, of citrons, and of cedrats.

When night arrived, they supped by the glimmering ight of a lamp; after which Madame de la Tour or Margaret, related the histories of travellers who had lost their way by night, in the forests of Europe infested by robbers; or of the shipwreck of some vessel driven by the tempest on the rocks of a desert island. On hearing melancholy details of this kind the hearts of these sensible young folks caught fire.

They implored of Heaven the grace to put in practice, one day, the duties of nospitality to unhappy persons in such circumstances.

Afterwards the two families separated to enjoy the gift of sleep, but in the ardor of impatience to meet again next morning.

Sometimes they were lulled to rest by the noise of the rain rushing down in torrents, on the roof of their cottages; or by the roaring of the winds, conveying to their ears the distant murmuring of the billows which broke upon the shore.

They united in giving thanks to God for their personal security, the sentiment of which was heightened by that of danger remote.

Madame de la Tour from time to time read aloud to the company some interesting portion of the history of the Old or New Testament.

They reasoned sparingly on the subject of those sacred books; for their theology consisted wholly in sentiment like that of nature, and their morality, wholly in active benevolence, like that of the gospel.

They had no days destined some to mirth others to

melancholy. Every day was to them a season of festivity, and every thing that surrounded them a divine temple, in which they incessantly admired an intelligence infinite, omnipotent, and graciously disposed toward man.

This sentiment of confidence in the Power Supreme filled them with consolation respecting the past, with fortitude for the present, and with hope for the time to come.

Thus it was that those females, constrained by calamity to fall back into nature, had unfolded in themselves, and in their children, those feelings which are the gift of nature, to prevent our sinking under the pressure of calamity

But as there sometimes arise in the best regulated spirits clouds to disturb its serenity, when any member of this society had the appearance of pensiveness all the rest felt attracted toward that one, and dissipated the bitterness of thought rather by feelings than by reflections.

Each exerted, to this effect, their particular character: Margaret a lively gaiety; Madame de la Tour, a mild theology; Virginia, tender caresses; Paul, frankness and cordiality. Nay Mary and Domingo contributed their share of consolation.

When they beheld affliction they were afflicted, when they saw tears shed they wept.

Thus the feeble plants interlace their boughs, in order to resist the violence of the hurricane.

When the weather was fine they went every Sunday to mass to the church of Pamplemousses, the tower of which you see below in the plain.

The wealthy planters resorted thither in their palanquins; and made many efforts to form an acquaintance with these happily united families, and invited them to partake of their parties of pleasure. But they uniformly declined accepting such tenders, civilly and respectfully, under the conviction that persons of consequence court the obscure, only for the pleasure of having complaint hangers-on, and that it is impossible to be complaisant but

by flattering the passions of another, whether they be good or bad.

On the other hand they shunned, with no less circumspection, all intimacy with the lower settlers, who are for the most part jealous, back-biters, and vulgar. They passed, at first, with one of those sets, for timid, and with the other for haughty; but their reserved behavior was accompanied with marks of politeness so obliging, especially to persons in distress, that they imperceptibly acquired the respect of the rich, and the confidence of the poor.

When mass was over, they were frequently sought unto, for the interposition of some gracious office or another. It was a person in perplexity who applied to them for their kind advice; or a child importuning them to visit a sick mother in one of the adjoining hamlets.

They always carried about them some receipts adapted to the diseases incident to the inhabitants, and they administered their prescriptions with that good grace which communicates such a value to small services.

They succeeded particularly in curing the maladies of the mind, so oppressive in a state of solitude, and in an infirm state of body.

Madame de la Tour spoke with so much confidence of the Deity, that the sick person, listening to her discourse, felt the impression of his presence.

From these visits Virginia frequently returned with her eyes bathed in tears, but her heart overflowing with joy; for she had been blessed with an opportunity of doing good. She it was who prepared beforehand, the medicines necessary to the sick, and who presented them with grace ineffable.

After those visits of humanity, they sometimes extended their walk by the valley of the long mountain, as far as my habitation, where I expected them to dinner, on the banks of the little river which flows in my neighborhood. I provided myself for such occasions with some bottles of

old wine, in order to enliven the gaiety of our Indian repasts by those pleasant and cordial productions of Europe.

At other times we had our rendezvous on the shore of the sea, at the mouth of some other rivers, which in this part of the world can hardly be called any thing more than a larger kind of brook. Thither we carried from the plantation various kinds of vegetable provision which we added to the abundant supplies furnished by the ocean. We fished along the shore for cabots, polypuses, lobsters, roaches, shrimps, crabs, urchins, oysters, and shell-fish of every kind.

Situations the most terrible, frequently procured us pleasures the most tranquillizing.

Sometimes seated on a rock under the shade of a velvet tree, we contemplated the billows from the main rolling on, and breaking under our feet with a tremendous roar.

Paul, who, besides his other qualities could swim like a fish, now and then advanced upon the shallows to meet the surge, then, as it approached, fled toward the shore, pursued by its vast, foaming and raging swell, a considerable way up the strand. But Virginia, as often as she saw this, screamed aloud, and declared that such kind of amusemen terrified her exceedingly.

Our meals were followed up by the singing and dancing of these two young people.

Virginia chanted the felicity of a rural life, and the wretchedness of sea-faring men, whom avarice prompts to encounter a furious element, rather than to cultivate the earth, which confers so many benefits in peace and tranquillity.

Sometimes, after the manner of the negroes, Paul and she performed a pantomime. Pantomime is the first language of man; it is practised among all nations. It is so natural, and so expressive, that the children of the whites quickly learn it, from seeing those of the blacks thus amuse themselves.

Virginia, recollecting the histories which her mother

sed to read, those especially which had affected her the most, exhibited the principal events of them with much natural expression: sometimes to the sound of Domingo's tam-tam, she made her appearance on the downy stage, bearing a pitcher on her head. She advanced with timidity to fill it with water at the source of a neighboring fountain.

Domingo and Mary, representing the shepherds of Midian, obstructing her passage, and feigned to repel her

Paul flew to her assistance, beat off the shepherds, filled the pitcher of Virginia, and placing it upon her head, at the same time bound around it a garland of the scarlet flowers of the periwinkle, which heightened the fairness of her complexion. Then taking a part in their innocent sports, I assumed the character of Raguel and bestowed Paul my daughter Zipporah in marriage

At another time, she represented the unfortunate Ruth, who returns to her lamented husband's country a widow, and in poverty, where she finds herself treated as a stranger, after a long absence. Domingo and Mary acted the part of the reapers. Virginia appeared, gleaning up and down after them, and picking up the ears of corn. Paul, imitating the gravity of a patriarch, interrogated her; she, trembling, replied to his questions. Moved with compassion, he immediately granted an asylum to innocence, and the rights of hospitality to misfortune. He filled Virginia's apron with provisions of every kind, and brought her before us, as before the elders of the city, declaring that he took her to wife, notwithstanding her extreme indigence.

At this scene, Madame de la Tour, calling to remembrance the state of desertion in which she had been left by her own relations, her widowhood, the kind reception which Margaret had given her, now succeeded by the hope of a happy union between their children, could not refrain from tears; and this blended recollection of good and evil, drew from the eyes of us all the tears of sorrow and of joy.

These dramas were exhibited with such a truth of expression, that we actually imagined ourselves transported to the plains of Syria or of Palestine. There was no want of decorations, of illuminations, and of orchestras, suitable to this spectacle.

The place of the scene usually was at the cross-paths of a forest, the openings of which formed around us several arcades of foliage

We were at their centre sheltered from the heat, all the day long: but when the sun had descended to the horizon, his rays, broken by the trunks of the trees, diverged into the shades of the forest in long luminous emanations, which produced the most majestic effect. Sometimes his complete disk appeared at the extremity of an avenue, and rendered it quite dazzling with a tide of light

The foliage of the trees, illumined on the under side with his saffron-colored rays, sparkled with the fires of the topaz and of the emerald.

Their mossy and brown trunks seemed to be transformed into columns of antique bronze, and the birds, already retired in silence under the dark foliage for the night, surprized by the sight of a new Aurora, saluted all at once the luminary of day, by a thousand and a thousand songs

The night very often surprized us regaling ourselves with these rural festivities; but the purity of the air, and the mildness of the climate, permitted us to sleep under an ajoupa in the midst of the woods, free from all fear of thieves either at hand or at a distance.

Every one returned next morning to his own cottage, and found it in the same state in which it had been left.

There reigned at that time so much honesty and simplicity in this uncommercial island, that the doors of many houses did not fasten by a key, and a lock was an object of curiosity to many Creoles.

But there was certain days of the year celebrated by Paul and Virginia as seasons of peculiar rejoicing; they were the birth days of their mothers.

Virginia never failed, the evening before, to bake and dress cakes of the flour of wheat, which she sent to the poor families of whites born in the island, who had never tasted the bread of Europe, and who, without any assistance from the blacks, reduced to live on maize in the midst of the woods, possessed, toward the support of poverty, neither the stupidity which is the concomitant of slavery, nor the courage which education inspires.

These cakes were the only presents which Virginia had it in her power to make, from the affluence of the plantation; but they were bestowed with a grace which greatly inhanced their value.

First, Paul himself was desired to undertake the charge of presenting them to those families, and they were invited on receiving them, to come on the morrow and pass the day at the habitation of Madame de la Tour and Margaret.

There arrived, accordingly, a mother with two or three miserable daughters, yellow, meagre, and so timid, that they durst not lift up their eyes.

Virginia presently set them all at their ease; she served them with a variety of refreshments, the goodness of which she heightened by some particular circumstances, which, according to her, increased its relish.

That liquor had been prepared by Margaret; this by her mother; her brother himself had gathered that fruit on the summit of the tree.

She prevailed on Paul to lead them out to dance She never gave over till she saw them content and happy. It was her wish that they should become joyful in the joy of the family. 'No one,' said she, 'can find happiness for himself but in promoting the happiness of another.'

On taking their leave to return home, she pressed them to carry away any thing which seemed to have given them peculiar satisfaction, veiling the necessity of accepting her presents, under the pretext of their novelty, or of their singularity.

If she remarked their clothes to be excessively tattered, she, with the consent of her mother, selected some of her own, and charged Paul to go by stealth and deposit them at the door of their cottages. Thus she did good, after the manner of the Deity; concealing the benefactress and shewing the benefit.

You gentlemen of Europe, whose minds are tainted from your early infancy by so many prejudices incompatible with happiness, you are unable to conceive how nature can bestow so much illumination, and so many pleasures. Your souls, circumscribed within a small sphere of human knowledge, soon attain the term of their artificial enjoyments; but nature and the heart are inexhaustible.

Paul and Virginia had no time pieces, nor almanacks, nor books of chronology, of history or of philosophy; the periods of their lives were regulated by those of nature. They knew the hour of the day by the shadow of the trees; the seasons, by the times when they produce their flowers, or their fruits; and years by the number of their harvests. These delightful images diffused the greatest charms over their conversation.

'It is dinner time,' said Virginia to the family, 'the shadows of the bananas are at their feet;' or else, night approaches, for the tamarinds are closing their leaves.'

'When shall we see you?' said some of her companions of the vicinity to her; 'at the time of the sugar-canes,' replied Virginia. Your visit will be still sweeter and more agreeable at that time returned these young people.

When enquiries were made respecting her own age and that of Paul, 'my brother,' said she, 'is of the same age with the great cocoa-tree of the fountain, and I, with that of the small one. The mango-trees have yielded their fruit twelve times, and the orange trees have opened their blossoms twenty-four times, since I came into the world.

Like Fauns and Dryads their lives seemed to be attached to those of the trees.

They knew no other historical epochs but the lives o. their mothers; no other chronology but that of their orchards; and no other philosophy but universal benificence, and resignation to the will of God.

After all, what occasion had these young creatures for such riches and knowledge as we have learnt to prize? Their ignorance and their wants were even a farther addition to their happiness

Not a day passed in which they did not communicate to each other some assistance, or some information: I repeat it, information; and though it might be mingled with some error, yet man in a state of purity has no dangerous error to fear.

Thus did these two children of nature advance n life: hitherto no care had wrinkled their foreheads, no intemperance had corrupted their blood, no unhappy passion had depraved their hearts; love, innocence, piety, were daily unfolding the beauties of their soul in graces ineffable, in their features, in their attitudes, and in their motions.

In the morning of life they had all the freshness of it: like our first parents in the garden of Eden, when, proceeding from the hands of their Creator, they saw, approached, and conversed with each other, at first, like brother and sister.

Virginia, gentle, modest and confident like Eve; Paul like Adam, with the stature of a man, and all the simplicity of a child.

He has a thousand times told me, that sometimes being alone with her, on his return from labour, he had thus addressed her.

'When I am weary, the sight of thee revives me; when from the mountain's height I descry thee at the bottom of this valley, thou appearest like a rose-bud in the midst of our orchards, when thou walkest toward the dwelling of our mothers, the partridge which trips along to its young one's, has a chest less beautiful. and a gait less nimble than thou hast. Although I lose sight of thee

through the trees, there is no occasion for thy presence in order to find thee again; something of thee, which I am unable to express, remains for me in the air through which thou hast passed, and on the grass upon which thou hast been seated.

'When I approach thee all my senses are ravished; the azure of the Heavens is less radiant than the blue of thine eyes; the warbling of the bengali is less sweet than the tone of thy voice; if I touch thee only with the tip of my finger, my whole body thrills with pleasure.

'Dost thou remember that day on which we passed across the pebbly bed of the river of the mountain of the Three Paps; when I arrived on its banks, I was very much fatigued, but as soon as I had taken thee on my back, it seemed as if I had gotten wings like a bird: tell me, by what charm thou hast been able thus to enchant me: is it by thy understanding? Our mothers have more than either of us: is it by their caresses?

'Our mothers embrace me still oftener than thou dost: I believe it is by thy benevolence; I shall never forget that thou walkedst bare-foot as far as the Black River, to solicit the pardon of a wretched fugitive slave.

'Receive, my much loved Virginia, receive this flowery branch of the lemon-tree, which I have gathered for thee in the forest: place it at night by thy pillow: eat this morsel of honey-comb, which I took for thee from the top of a rock. First however repose thyself upon my bosom, and I shall be again revived.'

Virginia replied, 'Oh, my brother! the rays of the rising sun on the summits of these rocks afford me less delight than thy presence: I love my own mother dearly; I love thine; but when they call thee son, I love them still more. The caresses which they bestow on thee are felt more sensibly by me than those which I myself receive from them.

'Thou askest me, why thou lovest me? But those tha are reared together always love each other: behold our

birds, brought up in the same nest, they love like us, like us they are always together: hearken how they call and reply to each other from bush to bush; in like manner when the echoes bring to my ear the airs which thou playest on thy flute from the mountain-top, I repeat the words of them at the bottom of this valley: thou art most dear to me, but above all, since that day on which thou wert determined to fight the master of the slave for my sake: since that period I have said to myself a thousand times: ah! my brother has an excellent heart: but for him I should have died with terror.

'I daily implore the blessing of the Almighty on my own mother, and on thine, on thyself, and on our poor domestics: but when I pronounce thy name my devotion seems to glow, I so earnestly intreat the Almighty that no evil may befal thee.

'Why dost thou go so far off, and climb to such heights, to find me fruits and flowers? Have we not enough in the garden? How fatigued, and in what a heat thou art just now!'

Then with her little white handkerchief she wiped his forehead and his cheeks, and gave him a thousand kisses.

Nevertheless for some time past Virginia had felt herself disturbed with an unknown malady. Her fine blue eyes were tinged with black, her colour faded, and an universal langour weakened her body. Serenity no longer sat upon her forehead, nor smiles upon her lips: all at once might be seen in her, gaiety without joy, and sadness without sorrow.

She withdrew herself from her innocent amusements, from her sweet occupations, and from the society of her much-loved family. She wandered here and there in the most solitary places of the plantation, seeking rest and finding none.

Sometimes, at the sight of Paul, she ran up to him in a playful manner; when all of a sudden, as she was on the point of coming in contact with him, an unaccountable

embarrassment seized her; a lively red coloured her pale cheeks, and her eyes no longer dared to fix themselves on his.

Paul thus addressed her: 'There rocks are covered with verdure, the birds warble when they see thee: all is gay around thee, and thou alone art sad.'

Thus, with embraces, did he endeavour to reanimate her; but she, turning away her head, flew trembling to her mother. The unhappy girl felt herself discomposed by the caresses of her brother.

Paul was quite ignorant of the cause of caprices so new and so strange.

Misfortunes seldom come singly One of those summers which desolate from time to time the lands situated between the tropics, happened to extend its ravages here also.

It was toward the end of December, when the Sun, in Capricorn, scorches with his vertical fires the whole Isle of France, for three weeks together: the south-east wind, which reigns there almost all the year round, now blew no longer.

Huge whirlwinds of dust raised themselves from the highways, and hung suspended in the air. The earth was cleft asunder in all parts, and the grass entirely burnt up; ardent exhalations issued from the sides of the mountains, and most of the rivulets were dried up. No cloud arose out of the sea; during the day-time, only red vapours ascended above its surface, and appeared at sun-set like the flames of a great conflagration. Even the night season diffused no coolness over the burning atmosphere.

The bloody disk of the moon, rose of an enormous size, in the hazy horison; the languid flocks, on the sides of the mountains, with their necks stretched out toward Heaven, and drawing in the air with difficulty made the valleys resound with their mournful cries: even the cafre who con-

nucted them lay along the ground, endeavouring to cool himself in that position.

Every where the soil was scorching hot, and the stifling air resounded with the buzzing of insects, which sought to quench their thirst with the blood of men and of animals.

One of those parching nights Virginia felt all the symptoms of her malady redouble. She got up, she sat down, she returned to bed, but in no attitude could she find either sleep or repose.

She rambled by the light of the moon toward the fountain; she perceived its source, which, in defiance of the drought, still flowed in silver fillets over the dusky sides of the rock.

Without hesitation she plunged herself into its bason; at first the freshness re-animated her; and a thousand agreeable recollections presented themselves to her mind. he remembered how, in the days of infancy, her mother and Margaret amused themselves with bathing Paul and her in that very stream, and how Paul afterwards, appropriating this bath solely to her use, had deepened its bed, covered the bottom with sand, and sowed aromatic herbs around its brink.

On her naked arms, and on her bosom, she perceived the reflexes of the two palm-trees, which had been planted at the birth of her brother and at her own, and which now interwove their green boughs, and their young cocoas, over her head. She called to remembrance the friendship of Paul, sweeter than perfumes, purer than the water of the fountain, stronger than united palm trees, and she heaved a sigh.

She then reflected that it was the night season, and that she was in solitude; a consuming fire enflamed her breast.

Immediately she hastened in dismay, from these dangerous shades, and from waters more ardent than the sun

of the Torrid Zone: she hurried to her mother to seek refuge from herself.

A thousand times, wishing to disclose her anguish, she pressed the maternal hands between her own: a thousand times she was on the point of pronouncing the name of Paul, but her heart was so full as to deprive her tongue of utterance, and reclining her head on the bosom of her mother, she bedewed it with a shower of tears.

Madame de la Tour plainly perceived the cause of her daughter's disorder, but even she herself had not the courage to speak to her about.

My child,' said she to her, 'address yourself to the Almighty, who dispenses health and life according to his good pleasure. He makes trial of your virtue to-day, only in order to recompense you to-morrow; consider that the chief end of our being placed on the earth is to practise virtue.'

In the mean time, those excessive heats raised out of the bosom of the ocean an assemblage of vapours, which like, a vast parasol, covered the face of the island.

The summits of the mountains collected these around them, and long furrows of flame from time to time issued out of their cloud-capt peaks.

Presently after tremendous thunder-claps made the woods, the plains, and the valleys, reverberate the noise of their explosions.

The rain in cataracts gushed down from the Heavens. Foaming torrents precipitated themselves down the sides of this mountain; the bottom of the bason was transformed into a sea; the platform on which the cottages were raised into a little island; and the entrance into the valley had become a sluice, out of which rushed, with awful impetuosity, by the force of the roaring waters, the earth, the trees, and the rocks.

The whole family, seized with trembling, addressed their prayer to God in Madame de la Tour's cottage, the

oof of which cracked dreadfully by the fury of the tempest.

Though the door and the outside window-shutters were closely barred, every object was clearly distinguishable within through the joining of the boards, so bright and so frequent were the flashes of lightning.

The intrepid Paul, attended by Domingo, went from the one cottage to the other, notwithstanding the raging of the elements, here securing a wall by a cross-beam, and there by driving in a stake; he went in only now and then, to comfort the family with the hope of a speedy return of fine weather.

In reality, towards evening the rain ceased; the trade-wind from the south-east resumed its usual current; the stormy clouds were driven to the north-west, and the setting sun appeared in the horizon.

The first wish which Virginia expressed, was to revisit the place of her repose: Paul approached her with a timid air, and offered her his arm to assist her in walking thither.

She accepted it with a smile, and they set out together from the cottage; the air was cool and sonorous: clouds of white smoke arose on the ridges of the mountains, furrowed here and there by the foam of the torrents, which were now drying up on every side.

As for the garden, it was entirely destroyed by deep gutters; most of the fruit trees were torn up by the roots: immense heaps of sand covered the stripes of meadow-ground and completely choked up Virginia's bath: the two cocoa-trees however were still standing, and in full verdure: the bowers and the grassy turfs were no more, and the ear was no longer charmed with the warbling of the birds, except a few bengalis on the summit of the neighbouring rocks, which deplored with plaintive notes the loss of their young.

At sight of this desolation, Virginia said to Paul, 'You brought the birds hither, and the hurricane has

destroyed them; you planted this garden, and it is now no more; every thing on earth perishes; Heaven alone is unchangeable.'

Paul replied, 'Oh! then, that it were in my power to bestow some gift of Heaven upon you! but alas! I possess nothing now, even on the earth.'

Virginia with a blush, returned: 'You have certainly the portrait of St. Paul, that you can call your own.'

Scarcely had she pronounced these words, than Paul flew to his mother's cottage to seek for it.

This portrait was a small miniature, representing Paul the hermit.

Margaret regarded it with singular devotion: while a girl she continually wore it round her own neck; but when she become a mother, she suspended it round the neck of her child.

It happened that when pregnant of him, and abandoned by all the world, from merely contemplating the image of this blessed recluse, the fruit of her womb contracted a strong resemblance to it: this determined her to bestow the same name on him; and likewise to give him for a patron, a Saint who had passed his life far from man, by whom he had been first abused and then deserted.

Virginia on receiving this small portrait from the hands of Paul, said, with much emotion: 'My brother, while I live this shall never be taken from me, and I shall always remember that you gave me the only possession you had in the world.

On hearing those tones of cordiality, on this unexpected return of familiarity and tenderness, Paul was going to clasp her in his arms; but as nimbly as a bird she sprung away, leaving him quite confounded, and totally unable to account for a conduct so extraordinary.

Meanwhile Margaret said to Madame de la Tour, 'Why should we not marry our children? Their passion for each other is extreme; my son, indeed, is not yet sen-

able of it; but when nature shall have begun to speak to him, to no purpose will we employ all our vigilance over them; every thing is to be feared.'

Madame de la Tour, returned: 'They are too young, and too poor: what anxiety would it cost us should Virginia bring into the world unhappy children, whom perhaps she would not have strength to rear.

'Domingo is very much broken; Mary is infirm; I myself, my dear friend, for these last fourteen years feel my health very much impaired.

'A person soon grows old in these hot countries, especially when that period is so greatly accelerated by sorrow. Paul is our only hope; let us wait till age has strengthened his constitution, and till he is able to support us by the labour of his hands. At present you well know we have hardly any thing more than a scanty supply from day to day.

'But if we send Paul to India for a short space of time, commerce will supply him with the means of purchasing some slaves. On his return hither we will marry him to Virginia; for I am well assured that no one can make my beloved daughter so happy as your son Paul.

Let us mention the matter to our neighbour.'

'These ladies accordingly consulted me, and I approved of their plan.

'The seas of India are delightful,' said I to them; 'if we chuse a favourable season for going from hence to that country, the voyage outward is but six weeks at most, and as long to return; we will make up a small assortment of goods for Paul; for I have some neighbours who are very fond of him; were we but to provide him with a parcel of raw cotton, of which we can here make no use for want of mills to dress it; some ebony wood which is so common here that we use it for fuel; and several sorts of rosin, which go to waste in these woods; all of those commodities will find a market in India, though they are of no value at all here.'

I took upon myself the charge of M. de la Bourdonaye permission for this embarkation; but I thought it necessary, before-hand, to open the business to Paul.

How was I astonished however when that young man said to me, with a good sense far above his years: 'Why would you have me quit my family for a visionary project of fortune? Can there be a more advantageous commerce in the world than the cultivation of a field, which sometimes yields fifty and a hundred fold?

'If we wish to engage in trade, can we not do so by carrying our superfluities from hence to the city, without the necessity of my rambling to the Indies? Our parents tell me that Domingo is old and worn out; but I am young, and daily acquiring fresh vigour. What if any accident should befal them during my absence, more especially to Virginia, who even now suffers very severely? Ah! no! no! I can never bring myself to the resolution of quitting them.'

His answer greatly embarrassed me; for Madame de la Tour had not concealed from me Virginia's condition, and the desire which she herself had of deferring their union till they were of a more mature age, by separating them from each other.

I durst not as much as hint to Paul that such were her motives.

Whilst these transactions were going on, a vessel newly arrived from France brought a letter to Madame de la Tour from her aunt.

The fear of death, without which obdurate hearts would never soften, had appalled her.

She had just recovered from a dangerous disorder, which produced a deep melancholy, and which age rendered incurable.

She requested her niece to return to France: or if the state of her health were such as to prevent her taking so long a voyage, she enjoined her to send Virginia thither, on whom she intended to bestow a good education, a place

at court, and a bequest of all her possessions; the return of her favour, she added, depended entirely on compliance with these injunctions.

No sooner had this letter been read than it spread universal consternation in the family; Domingo and Mary began to weep; Paul, motionless with astonishment, seemed ready to burst with rage; Virginia, her eyes stedfastly fixed on her mother, dared not to utter a syllable. "Can you bring yourself to the resolution of quitting us?" said Margaret to Madame de la Tour. "No, my friend, no, my children," replied Madame de la Tour; "I will never leave you; with you I have lived, and with you I mean to die; I never knew what happiness was till I experienced your friendship; if my health is impaired, ancient sorrows are the cause; my heart has been pierced by the harshness of my relations, and by the loss of my beloved husband: but since that period I have enjoyed more consolation and felicity with you, in these poor cottages, than ever the riches of my family gave me reason to expect, even in my native country." At these words tears of joy bedewed the cheeks of the whole household. Paul, folding Madame de la Tour in his arms, exclaimed, "And I will never, never quit you, nor go from hence to the Indies; you shall experience no want, my dear mother, as long as we are able to work for you."

Of all the society, however, the person who testified the least joy, and who nevertheless felt it the most, was Virginia. A gentle cheerfulness appeared in her the remainder of the day, and the return of her tranquillity redoubled the general satisfaction. Next morning, at sun rise, as they were offering up their accustomed matin prayer which preceded breakfast, Domingo informed them that a gentleman on horseback was approaching the plantation, followed by two slaves. It was M. de la Bourdonaye. He entered the cottage where the whole family were at table; Virginia was serving up, according to the custom of the country, coffee and boiled rice; there were

likewise hot potatoes and fresh bananas; the only dishes which they had were the halves of a gourd, and all their table linen consisted of the leaves of the plaintain.

The governor at first expressed some surprise at the meanness of their dwelling; then, addressing himself to Madame de la Tour, he said, that his public situation sometimes prevented him from paying attention to individuals, but that she, however, had a title to claim his more immediate regard. "You have, madam," added he, "an aunt at Paris, a lady of quality, and very rich, who designs to bestow her fortune upon you, but at the same time expects that you will attend her." Madame de la Tour replied, that her unsettled state of health would not permit her to undertake so long a voyage. "Surely then," cried M. de la Bourdonaye, "you cannot, without injustice, deprive your young and beautiful daughter of so great an inheritance; I will not conceal from you that your aunt has employed authority to secure your daughter's compliance with her wish. The minister has written to me on the subject, authorizing me, if necessary, to exercise the hand of power; but my only aim in employing that, is to promote the happiness of the inhabitants of this colony; I expect therefore that you will with cheerfulness submit to the sacrifice of a few years, on which depend the establishment of your daughter, and your own welfare for the remainder of life. For what purpose do people resort to these islands? Is it not in the view of making a fortune? Surely, however, it is far more agreeable to return and obtain one in our native country."

As he said these words, he placed upon the table a large bag of piastres, which one of his slaves had brought. "This," added he, "is what your aunt has remitted to make the necessary preparations for the voyage of the young lady your daughter." He then concluded with gently reproaching Madame de la Tour for not having applied to him in her necessities, at the same time applauding the noble firmness which she had displayed.

Paul upon this broke silence, and thus addressed the governor: "Sir, my mother did apply to you, and your reception was unkind to the last degree." "Have you then another child?" said M. de la Bourdonaye to Madame de la Tour. "No, sir," replied she, "this is the son of my friend, but he and Virginia are our common property, and equally beloved by both." "Young man," said the Governor, addressing himself to Paul, "when you shall have acquired experience of the world, you will learn to what distresses people in place are exposed; you will discover how easy it is to prejudice them, and how often intriguing vice obtains from them what, in justice, should be bestowed on concealed merit." M. de la Bourdonaye, on the invitation of Madame de la Tour, seated himself by her at the table; he breakfasted, as the Creoles do, upon coffee mixed with boiled rice: he was charmed with the order and neatness of the little cottage, with the union of the two happy families, and even with the zeal of their old domestics. "Here," said he, "is no furniture but what the woods supply, but I see countenances serene, and hearts of gold."

Paul, delighted with the familiarity of the new governor, said to him, "I desire your friendship, for you are an honest man." M. de la Bourdonaye received this mark of insular cordiality with pleasure; he embraced Paul, and pressing him by the hand, assured him that he might rely upon his friendship. After breakfast he took Madame de la Tour apart, and informed her that a favourable opportunity offered of sending her daughter into France, by means of a vessel on the point of sailing, and that he would recommend her to the care of a lady, a relation of his own, who was going passenger in it; representing, at the same time, that it would be very wrong to sacrifice the prospect of an immense fortune to the pleasure of her daughter's company for a few years. "Your aunt" added he, as he was departing, "cannot hold out more than two years longer; her friends have assured me of it: con-

sider the matter therefore seriously, I pray you, consult your own mind; surely every person of common sense must be of my opinion." Madame de la Tour replied "As I desire nothing henceforward but the welfare of my daughter, the voyage to France shall be left entirely to her own disposal." Madame de la Tour was not sorry at finding an opportunity of separating Paul and Virginia for a short time, but it was only in the view of securing their mutual happiness at a future period. She accordingly took her daughter aside, and said to her: "My dear child, our domestics are growing old; Paul is still very young; age is stealing upon Margaret, and I myself am already infirm: should I happen to die, what will become of you in the midst of these deserts? You will be left entirely alone with no person to assist you, and you will be obliged to procure yourself a livelihood by labouring incessantly in the ground, like a hireling; such an idea overwhelms me with grief." Virginia thus replied: "God has doomed us to labour you have taught me how to work, and to offer up daily thanksgiving to him; hitherto he has not abandonned us, nor will he abandon us now; his providence watches with peculiar care over the unhappy, you have told me so a thousand times, my dear mother! Oh, I shall never have resolution to quit you." Madame de la Tour, much affected, returned; "I have no other intention than that of rendering you happy, and of uniting you one day to Paul, who is not your brother; consider likewise that his fortune now depends entirely on you."

A young girl in love thinks that every one is ignorant of it; she spreads the same veil over her eyes which she wears on her heart; but when it is removed by the hand of a beloved friend, immediately the secret torments of her love transpire, as through an open barrier, and the gentle expansions of confidence succeed to the mysterious reserve in which she had enveloped herself.

Virginia, sensibly alive to the new testimonies of her mother's kindness, freely related the many struggles which

she had experienced within herself, and of which God alone had been the witness; that she perceived the hand of his providence in the consolation administered by a tender mother, who approved of her inclination, and who would direct her by wholesome counsel; and that now, resting entirely on her support, every thing operated as an inducement to remain where she was, without uneasiness for the present, or anxiety for the future.

Madame de la Tour, perceiving that her confidence had produced an effect entirely different from what she had expected, said to her, "My dear child, I have no wish to constrain your inclinations; consider the matter at your leisure; but conceal your love from Paul: when the heart of a young woman is gained, her lover has nothing more to ask of her.'

Toward the evening, while she was alone with Virginia, a tall man dressed in a blue cassock came in. He was an ecclesiastic missionary of the island, and confessor to Madame de la Tour and Virginia, and had been sent thither by the governor.

'My children' said he, as he entered, 'there is wealth in store for you, now, thanks to heaven! You have at length the means of gratifying your benevolent feelings, by administering assistance to the wretched. I well know what the governor has said to you, and also your reply. My good madam, the state of your health obliges you to remain here; but as for you, young lady, you have no excuse. We must obey the will of providence, in respect of our aged relations, however unjust they have been to us. It is a sacrifice, I grant, but it is the command of the Almighty. He devoted himself, for us, and it is our duty to devote ourselves for the welfare of our kindred. Your voyage into France will finally come to a happy issue: can you possibly, my dear child, have any objection to go thither?'

Virginia, with her eyes cast down, and trembling as she spake, replied: 'If it is the command of God that I should

go I have nothing to say against it; the will of God be done,' said she, bursting into tears.

The missionary took his departure, and gave the governor an account of the success of his embassy. Madame de la Tour however sent a message to me by Domingo, intreating me to come over, and consult about Virginia's departure. It was my firm opinion that she ought not to be permitted to go. I maintain, as infallible principles of happiness, that the advantages of nature ought always to be preferred before those of fortune; and that we should never seek from abroad those blessings which we can find at home. I extend these maxims to all cases, without a single exception.

But of what avail could my moderate counsels prove, against the illusions of an immense fortune, and my natural reason against the prejudices of the world, and against an authority held sacred by Madame de la Tour.

This lady consulted me only out of politeness, for she no longer deliberated in her own mind after the decision of her confessor. Even Margaret, who, in spite of the advantages which she thought her son might derive from Virginia's fortune, had warmly opposed her departure, no longer made any objections.

As for Paul, entirely ignorant of the resolutions which might be formed, and alarmed at the secret conversations of Madame de la Tour and her daughter, he abandoned himself to a gloomy sadness: 'surely,' said he, 'they are contriving some mischief against me, from the mysteriousness of their conduct toward me.'

A report meanwhile being soon circulated in the island, that fortune had visited these solitudes, merchants of every description might be seen scrambling up hither: they displayed, amidst these poor cottages, the richest stuffs of India; the superfine dimities of Goudelour; the handkerchiefs of Poulicat and Mazulipatam, the muslins of Decca, plains, striped, embroidered, and transparent as the day; the baftas of Surat, so beautifully white, also chintzes of

all colors, and of the rarest sort, with a sable ground and green sprigs. They unrolled the magnificent silks of China; lampas pinked into transparency; satiny-white damasks, some of a meadow-green, others of a dazzling red; rose-colored taffetas, satins in whole bales, pekins soft as wool, white and yellow nankeens, and even the stuffs of Madagascar.

Madame de la Tour gave her daughter permission to purchase whatever pleased her, carefully examining however the quality of the goods and their prices, lest the merchants should impose upon her.

Virginia made choice of what she thought would be agreeable to her mother, to Margaret, and to Paul. 'This,' said she, 'will be useful for furniture, that for Domingo and Mary.' In short, the bag of piastres was expended before she thought of her own wants. It became necessary to cull her portion out of the presents which she had distributed among the household.

Paul, overwhelmed with sorrow at the sight of these gifts of fortune, which presaged the departure of Virginia, came to my house a few days afterwards; he said to me with a melancholy air: 'my sister is going to leave us; preparations are already made for her departure. Come over to our habitation I entreat you, and make use of your influence on the minds of her mother and of mine.'

I accordingly yielded to his importunity, though we assured that my representations would be ineffectual.

If Virginia had appeared beautiful to me in her dress of blue Bengal cloth, with a red handkerchief tied round her head, how was she improved when I saw her habited like the ladies of this country! She was dressed in white muslin, lined with rose-colored taffeta: her stays displayed her elegant and majestic shape to great advantage; and her beautiful flaxen hair, in long double tresses, adorned her virgin head; her fine blue eyes had assumed a cast of melancholy, and the agitation which her heart endured, by struggling with a smothered passion, gave a glowing

tint to her complexion, and tones full of emotion to her voice. The very contrast of her elegant dress, which she seemed to wear against her will, rendered her languor still more affecting. No one could see or hear her without being moved.

Paul's sadness was increased by it. Margaret, afflicted at her son's situation, took him apart, and thus addressed him.

'Why, my son, do you feed yourself with false hopes, which only serve to render the disappointment of them more bitter? It is now time to disclose to you the secret of your life, and of my own.

'Madamoiselle de la Tour is related by her mother's side to a person of immense wealth, and of high rank. As to yourself, you are only the son of a poor low-born woman; and, what is still worse, you are a bastard.'

The word bastard greatly surprized Paul; he had never heard it made use of before, and he asked his mother the meaning of it: she replied, 'you had no legitimate father when I was a girl, love betrayed me into a folly, of which you are the fruit. My frailty deprived you of the family of your father, and my repentance that of your mother. Unfortunate boy! I am the only relation you have in the world.' She concluded by bursting into a flood of tears. Paul, folding her in his arms, exclaimed: 'alas, my mother, since I have no other relation but you, I will love you still the more: but what a secret have you just divulged to me! I now plainly perceive the reason why Madamoiselle de la Tour has for these two months shunned me, and which has at length determined her to take her departure. Alas! without doubt she despises me!'

However, the hour of supper came; each of the guests took a place at table, agitated with different passions; they ate little, and did not utter a single syllable.

Virginia retired first, and came and seated herself on the spot where we now are. Paul soon followed, and placed himself by her side: a profound silence ensued for some time.

It was one of those delightful nights, so common between the tropics, and whose beauty baffles all description. The moon appeared in the middle of the firmament, enveloped with a cloudy curtain, which was gradually dissipated by her rays Her light insensibly diffused itself over the mountains of the island, and over their peaks, which glittered with a silvery verdure. Not a breath of wind was to be heard.

In the woods at the bottom of the valley, and at the top of these rocks, the soft warblings and gentle murmurings of the birds, which were caressing each other in their nests, delighted with the beauty of the night, and the tranquillity of the air, stole on the ear. All, even to the very insects, were humming along the grass; the stars, twinkling in the heavens, reflected their trembling images on the surface of the ocean.

As Virginia was surveying with wandering eyes, the vast and gloomy horizon, distinguishable from the shores of the island by the red fires of the fishermen, she perceived at the entrance of the port, a light fixed to a large dark body; it was the lanthorn on the vessel in which she was to embark for Europe, and which, ready to set sail, only lay at anchor till the breeze should spring up. At this sight she was so deeply affected that she turned her head aside, lest Paul should perceive her tears.

Madame de la Tour, Margaret and I, were seated a few paces from them, under the shade of the banana trees; and, owing to the stillness of the night, we distinctly heard their conversation, which I shall never forget.

Paul said to her: 'I understand, madam, that you are to take your departure hence in three days: have you no apprehension at the thought of exposing yourself to the dangers of the sea; the sea at which you used to be so terrified?'

'It is my duty you know,' replied Virginia, 'to obey the commands of my relations.'

'You are going then,' said Paul, 'to quit our society for

a female relation who lives far from hence, and whom you have never seen!'

'Alas!' returned Virginia, 'had I been permitted to follow my own inclination I should have remained here all the days of my life; but my mother is of a contrary opinion, and my confessor said it is the will of God that I should depart; that life is a state of probation: Alas! how severe that probation is.'

'How,' replied Paul, 'so many reasons to determine thee to leave us, and not one to induce thee to remain! Ah! of the former there is still one which you have not mentioned: the attractions which wealth holds out are powerful. You will soon find, in a world entirely new to you, another person on whom to bestow the name of brother, by which you now no longer address me: you will find this brother among your equals, and such as have riches and high birth, which I can never offer you. But whither can you go to be more happy than where you are? On what land can you set your foot dearer to you than that which gave you being? Where can you find a society more amiable than that one of which you are entirely beloved? How can you exist without the caresses of your mother, to whom you have been so long accustomed? What will become of your mother herself, already far advanced in life, when she no longer sees you by her side, at table, in the house, and in her walks, where you used to be her support? To what a state will my parent be reduced, who is as fondly attached to you as your own? What can I say to give them consolation, when I see them mourning your absence? Cruel girl! I say nothing of myself; but, what shall become of me, when in the morning I no longer enjoy your company, and when night comes on, without bringing us together again, and when I shall behold these palm-trees, planted at our birth, and which so long have been the witnesses of our mutual affection. Ah! since a new destiny attracts you; since you will seek other countries far from the spot where you was

born, and other possessions than those which the labor of my hands has procured for you, allow me to accompany you in your voyage; I will encourage you during those tempests which caused such apprehensions in you while on shore. Thy head shall repose upon my bosom; I will clasp thee to my breast; and in France, whither thou art going in quest of fortune and of greatness, I will follow thee as thy slave; in the palaces where I shall behold thee served and adored, I will rejoice at thy happiness, even then I shall be rich enough to offer thee the greatest of sacrifices, by dying at thy feet.'

His voice was entirely stifled with sobbing; we presently heard that of Virginia, who addressed him in these words, frequently interrupted by sighs.

'It is for thy sake that I go away—for thee, whom I have daily seen bowed down to the ground, laboring to support two infirm families. If I have embraced this opportunity of acquiring wealth, it is only to return a thousand fold the good which thou hast done to us all. Can there be a fortune worthy of thy friendship? Why mention thy birth to me? Ah! were it even possible that another brother should be offered to me, could I choose any but thee? Oh! Paul! Paul! thou art far dearer to me than a brother. What a struggle hath it cost me to keep thee at a distance! I even wished thee to assist me in separating me from myself, till Heaven could bless our union. But now, I remain! I depart! I live! I die! Do what thou wilt with me; Oh, irresolute girl that I am! I had fortitude to repel thy caresses, but thy sorrow quite overpowers me.'

At these words Paul took her in his arms, and holding her closely embraced, exclaimed with a terrible voice: 'I am resolved to go with her, nor can any thing shake my resolution.'

We immediately flew toward him, and Madame de la Tour addressed him in these words:—

'My son, should you go away what is to become of us?'

He repeated these words shuddering: 'my son, my son!—

'Dost thou,' cried he, 'act the part of a mother, thou, who separatest brother and sister? We both were nourished by thy milk: we both were nursed upon thy knees; from thee too we learnt to love each other; we have said so to each other a thousand times; yet now you are going to remove her from me; you are not only sending her to Europe, that barbarous country which denied yourself shelter, but even to those cruel relations who abandoned you. You may say to me, you have no authority over her, she is not your sister: yes, she is every thing to me, my riches, my family, my birth, my all; I know no other blessing; we were brought up under the same roof, we reposed in the same cradle, and the same grave shall contain us. If she goes, I am resolved to follow. The Governor will prevent me! Can he prevent me from throwing myself into the sea? I will swim after her; the sea cannot be more fatal to me than the dry land. As I cannot live near her, I shall at least have the satisfaction of dying before her eyes, far, far from thee. Barbarous mother! pitiless woman! Oh, may that ocean, to the perils of which thou art going to expose her, never give her back to thy arms! May these billows bear my body back to thee, and casting it, together with her's, on this rocky shore, cause an eternal melancholy to settle on thee, by presenting to thy view the unhappy fate of thy two children.'

While he spake I seized him in my arms, for I perceived that despair had overpowered his reason: his eyes sparkled; large drops of sweat ran down his inflamed countenance; his knees trembled, and I felt his heart beat with redoubled violence in his burning bosom.

Virginia, terrified, said to him: 'Oh, my friend, I wear by the pleasures of our early age, by thy misfortunes and my own, and by all that ever could unite two unfortunate wretches, that if I remain here I will only live for

thee; and if I depart I will one day return to be thine. I call you to witness all ye who have watched over my infant steps; you who have the disposal of my life, and who now behold the tears which I shed: I swear it, by high Heaven, which now hears me; by that ocean which I am going to brave: by the air which I breathe, and which hitherto I have never polluted with a falsehood.'

As the heat of the sun dissolves and precipitates an icy rock from the summit of the Apennines, so did the impetuous rage of this young man subside at the voice of the beloved object. His lofty head drooped down, and a torrent of tears gushed from his eyes. His mother, mingling her own tears with his, held him locked in her arms, without the power of utterance. Madame de la Tour, quite distracted, said to me: 'I can contain myself no longer: my soul is torn with contending passions. This unfortunate voyage shall not take place. Do, my dear neighbour, endeavour to persuade my son to accompany you homewards: eight days have elapsed since any of us have enjoyed a single moment of sleep.'

I accordingly said to Paul: 'My good friend, your sister shall remain with us; to-morrow we will mention the matter to the Governor; meanwhile leave your family to repose, and come and pass the night at my habitation.

It is late, it is midnight: the cross of the south is directly over the horizon.'

He allowed me to conduct him in silence. After a very restless night he rose at day-break, and returned to his own home.

But wherefore should I continue the recital of this melancholy story to you any longer? There is only one agreeable side to contemplate in human life. Like the globe on which we revolve, our rapid career is only that of a day, and part of that day cannot receive illumination till the other be envolved with darkness.

'Father,' said I to him, 'I must entreat you to finish

the account of what you have begun in a manner so affecting.'

Images of happiness delight the fancy, but the recital of misfortunes conveys instruction to the mind. I am anxious to learn what become of the unfortunate Paul.

The first object which struck Paul, on his return to the plantation, was the negress Mary, who, mounted on a rock, had her eyes stedfastly fixed on the main ocean.

The moment that Paul perceived her, he exclaimed, 'Where is Virginia?'

Mary turned her head toward her young master, and burst into tears.

Paul, in delirium, turned round, and flew to the port.

He there learned that Virginia had embarked at daybreak, that the vessel had set sail immediately, and was now no longer in sight.

He directed his steps back to his place of habitation, and walked up and down in profound silence.

Although this enclosure of rocks appears almost perpendicular behind us, those green flats which sub-divide their heights, are so many stages, by which you arrive, by means of some intricate paths, at the foot of that inclining and inaccessible cone of rocks, which is called the Thumb.

At the bottom of this rock is an esplanade, covered with great trees, but so lofty and so steep, that they appear like a large forest in the air, surrounded with fearful precipices.

The clouds which the summit of the 'Thumb' attracts continually around it, incessantly feed several cascades of water, which are precipitated to such a depth into the bottom of the valley, which is situate at the back of this mountain, that when you are at its top you no longer hear the noise of their fall.

From this place a great part of the island is perceptible, as well as the peaks of several of its mountains; among others, those of Piterboth, and of the Three Paps,

and their valleys covered with forests; then the open sea, and the Island of Bourbon, which is forty leagues to the westward.

From this elevation Paul perceived the vessel which bare away Virginia.

He described it at more than ten leagues distance, like a black speck in the middle of the vast ocean.

He spent a considerable part of the day in contemplating it, and though it had actually disappeared from his sight, he still imagined that he perceived it; and when he had entirely lost it in the thick vapour of the horizon, he seated himself in this desolate spot, which is always agitated by the winds which blow incessantly on the tops of the palm-trees, and of the tatamaques.

Their loud and hollow murmurs resemble the deep tones of an organ, and inspire a profound melancholy.

There I found Paul, his head leaning against the rock, and his eyes rivetted to the ground. I had been seeking him since sun-rise, and it was with much difficulty that I could prevail on him to descend, and re-visit his family.

At length, however, I brought him back to his habitation; but the moment he cast his eyes on Madame de la Tour, he began to reproach her bitterly for having so cruelly deceived him.

She informed us, that a breeze having sprung up about three in the morning, and the vessel being in full trim to depart, the Governor, attended by his principal officers and the missionary, came with a palanquin to carry off Virginia; and in spite of her expostulations, her tears, and those of Margaret, all of them exclaiming that it was for their interest they had hurried away her daughter, who was almost expiring.

'Alas!' exclaimed Paul, 'if I had only enjoyed the satisfaction of bidding her farewell, I should now have been happy.

'I would have said to her; Virginia, if during the time that we have lived together, I have made use of any cru-

word which may have given you offence, tell me that I have your forgiveness, before we part for ever.

'I would have said; since fate has decreed an eternal separation, adieu my dear Virginia, adieu; may you live, far from hence, contented and happy.'

Perceiving Madame de la Tour and his mother weeping: 'Go,' said he to them, 'go, and seek some other hand than mine to wipe away your tears.'

He then hastened from them, sighing deeply, and wandered up and down through the plantation.

He went over all those places which had been the most favourite retreats of Virginia.

He said to her goats, and to the kids, which followed him bleating; 'What do you ask of me? Alas! you will never more see in my company the person whose hand used to feed you.'

He then wandered to Virginia's Rest, and at sight of the birds which fluttered around him, he exclaimed: 'Unhappy songsters! No longer will you fly to meet her from whom you received your nourishment.'

Perceiving Fidèle following the scent up and down, and ranging round, he sighed, and said to him, 'Alas thou wilt never find her more!'

At length he went and seated himself on the rock where he had spoken to her the evening before; and at sight of the sea where he had perceived the vessel disappear, he wept bitterly.

We followed him however step by step, fearing lest the agitation of his mind should take some fatal turn.

His mother and Madame de la Tour entreated him, by the most tender appellations, not to aggravate their affliction by his despair.

At length the latter calmed him in some degree, by lavishing upon him the names which were most calculated to revive his hopes.

She called him her son, her dear son, her son-in-law

the only person on whom she intended to bestow her daughter.

She at length persuaded him to return to the house and take some nourishment.

He seated himself at the table with us, near the spot where the companion of his infancy used to place herself; and as if she had still occupied it, he addressed himself to her, and tendered that food which he knew was most agreeable to her; but, perceiving his error, he burst into tears.

For some days following he collected every thing which she was accustomed to keep for her particular use; the last nosegay which she had worn, and a cup made of the cocoa-nut out of which she usually drank: and as if these reliques of his friend had been the most precious treasures in the world, he kissed them, and put them in his bosom.

The ambergris does not shed so sweet a perfume as those things which have been touched by a beloved object.

But Paul at length perceiving that his dejection only augmented that of his mother, and of Madame de la Tour, and likewise observing that the necessities of the family called for continual labour, he began with Domingo's help to repair the garden.

In a short time this young man, before as indifferent as a Creole about what was passing in the world, entreated me to teach him to read and write, that he might be able to keep up a correspondence with Virginia.

He afterwards seemed eager to be instructed in geography, in order to form an idea of the country whither she was steering; and in history, that he might learn what were the manners of the people among whom she was going to live.

Thus did he attain to perfection in agriculture, and in the art of disposing in order the most irregular spot of ground, merely by the sentiment of love.

Doubtless, it is to the delights of this ardent and rest-

less passion, that men must ascribe the origin of the generality of arts and sciences; and it is from its privations, that the philosophy derives its birth, which teaches us to console ourselves for every loss. Thus nature, having made love the bond of union to all created beings, has rendered it the grand moving principle of society, and the principal source of our illuminations and of our pleasures.

Paul did not greatly relish the study of geography, which, instead of unfolding the nature of each country, only presents its political divisions.

History, and especially modern history, did not interest him much more. It only presented to his mind general and periodical misfortunes, the reason of which it was impossible for him to penetrate; wars without a cause, and with no object in view; contemptible intrigues; nations destitute of character, and sovereigns without a principle of humanity.

He even preferred to such reading, that of romance, which having only in view the feelings and the interests of man, sometimes displayed situations similar to his own.

Accordingly, no book delighted him so much as Telamachus, from the pictures which it delineates of a country life, and of the passions which are natural to the human heart.

He read to his mother, and to Madame de la Tour, those passages which affected him the most: at times mournful recollections striking his mind, he lost the power of utterance, and tears gushed from his eyes.

He thought he could trace the dignity and the wisdom of Antiope, together with the misfortunes and the tenderness of Eucharis in his beloved Virginia.

On the other hand, he was quite shocked at reading our fashionable romances, so full of licentious maxims and manners; and when he understood that these romances displayed a real picture of European nations, he feared,

and not without reason, that Virginia might be there corrupted, and cast him from her remembrance.

In truth near two years had elapsed before Madame de Tour heard any intelligence of her aunt, or of her daughter. she had only been informed by the report of a stranger that the latter had arrived safely in France.

At length however she received, by a vessel on her way to India, a pacquet, together with a letter in Virginia' own hand writing; and, notwithstanding the circumspection of her amiable and gentle daughter, she apprehended her to be very unhappy.

This letter so well depicted her situation and her character, that I have retained it in my memory almost word for word:

'*My dear and much-loved Mother,*

'I have already written to you several letters, in my own hand; but as I have received no answer, I must suspect that they have never reached you. I hope this will be more fortunate, both from the precaution which I have taken to send you news of myself, and to receive your's in return.

'Many tears have I shed since our separation, I who scarcely ever before wept, except at the misfortunes of another.

'On my arrival, my grand-aunt was much surprised when on questioning me concerning my attainments, I informed her that I could neither read nor write.

'She asked me what I had been doing then since I came into the world; and when I told her that my whole study had been the care of a family, and obedience to you, she replied, that I had received the education of a menial servant.

'The day following, she placed me as a boarder in a large convent near Paris, where I had masters of every description; among other things, they instructed me in

history, in geography, in grammar, in mathematics, and in horsemanship; but my inclination for all these sciences was so faint, that I profited very little by the lessons of the gentlemen who taught them.

'I feel that I am a poor creature, and of little spirit, as they interpret the word here.

'My aunt's kindness, however, does not diminish: she is continually giving me new dresses, according to the season: I have two women to attend me, who are habited as elegantly as ladies of quality.

'She has likewise made me assume the title of Countess, but has obliged me to relinquish the name of La Tour, which was as dear to me as to yourself, from the troubles which you have told me my poor father underwent, to obtain you in marriage.

'She has substituted your family name in its place, which I likewise esteem, because it was your's when a girl.

'As she has raised me to a situation so exalted, I entreated her to send you some supply: How can I repeat her answer?

'You, however, have always commanded me to speak the truth; this then was her reply, that a small matter would be of no use to you, and that, in the simple style of life which you lead, a great deal would only embarrass you.

'At first I attempted to communicate to you tidings of my situation, by the hand of another, as I was incapable of writing myself; but not being able to find, since my arrival here, a single person on whose fidelity I could rely, I applied myself night and day to the means of learning how to read and write; and by the assistance of Heaven, I accomplished this in a very little time.

'I entrusted the ladies who attend me with the dispatch of my former letters, but I have reason to suspect that they delivered them to my grand-aunt.

'On the present occasion, I have had recourse to one

of my friends, who is a fellow-boarder; and under her address, which I have subjoined, I must beg you to convey an answer.

'My grand-aunt has prohibited all foreign correspondence, which might, as she alleges, oppose insurmountable obstacles to the splendid views which she entertains with regard to me. The only person, beside herself, who visits me at the grate, is an old nobleman of her acquaintance, who she informs me has taken a great liking to my person. To say truth, I have not the least for him, even were it possible I should conceive a partiality for any one whatever.

I live in the midst of gaudy wealth, and have not the disposal of a single farthing.

'They tell me that if I had the command of money, it might lead to dangerous consequences. My very gowns are the property of my waiting-women, who are disputing which shall have them even before I have left them off myself.

'In the very bosom of riches, I am much poorer than when I was with you, for I have nothing to give away.

'When I found that the many magnificent accomplishments which I was destined to acquire, were not to procure me the power of doing the smallest good, I had recourse to my needle, in the use of which, by good fortune, you had instructed me. I accordingly send you some pairs of stockings, of my own manufacture, for yourself, and my mamma Margaret; a cap for Domingo, and one of my red handkerchiefs for Mary: I enclose you, likewise, in this paquet, the kernals of the fruits of which our deserts are composed, together with the seeds of all kinds of trees, which I gathered during my hours of recreation in the garden of the convent. To these I also add the seeds of the violet, the daisy, the butter-flower, the poppy, the blue bottle, and the scabious, which I have picked up in the fields.

'In the meadows of this country, the flowers are far

more beautiful than in ours, but no one pays any regard to them. I am very well assured, that you and my mamma Margaret will be much better pleased with this bag of seeds, than with the bag of piastres which was the cause of our separation, and of the tears which I have since shed.

'I shall feel the greatest pleasure, if one day you have the satisfaction of seeing apple-trees growing beside our bananas, and beech-trees mixing their foliage with that of the cocoas: you will fancy yourself in Normandy again, which you still love so much.

'You enjoin me to communicate to you my joy and my sorrows; joy I can never experience when at a distance from you; and as for my sorrows, I soothe them by reflecting that I am in a situation where you thought proper to place me, in obedience to the will of Heaven.

'My most cruel mortification is, that not a single person here mentions your name to me, and that I am not allowed to talk of you to any one.

'My waiting-women, or rather those of my grand-aunt, for they are her's more than mine, tell me, when I attempt to converse about those objects which are so dear to me: Madam, remember that you are now a Frenchwoman, and that you must forget the country of savages.

'Ah! I shall sooner forget myself than forget the place where I was born, and where you still live! It is the country where I am, which to me is the country of savages, for I live alone, without a single person to whom I can communicate that love for you which I shall carry with me to the grave.

Dear and much-loved mother, I remain your obedient and affectionate daughter,

'VIRGINIA DE LA TOUR.

'I recommend to your kindest regards Mary and Domingo, who took such care of my infancy: stroke Fidèle for me, who found me again when I was lost in the woods.'

Paul was much surprized that Virginia had not made the least mention of him; she who had not even forgot the house-dog: he was entirely ignorant that be the letter of a female as long as it may, the fondest idea always comes in last.

In a postcript Virginia particularly recommended to Paul two kinds of seeds, those of the violet and of the scabious.

She gave him some information respecting the characters of these plants, and about the places in which it was most proper to sow them.

The violet, she told him, produced a small flower of a deep purple hue, which delights to hide itself under the bushes, but is soon discovered by its delicious perfume. She desired him to plant it on the brink of the fountain, at the foot of her cocoa-tree. 'The scabious,' added she, 'bears a pretty flower of a pale blue, and its bottom is black, interspersed with white spots. One would think it to be in mourning; it is likewise for this very reason called the widow's flower. It flourishes best in places rugged and agitated by the winds.' She requested him to sow it on the rock where she had talked with him by night, for the last time, and to give that rock, for her sake, the name of 'Rock Farewel.'

She had inclosed these seeds in a little purse, the embroidery of which was very simple, but which appeared inestimable to Paul, when he perceived a P and a V interwoven in it, and formed of hair, which he knew from its beauty to be that of Virginia.

The letter of this sensible and virtuous young lady drew tears from the whole family.

Her mother replied in the name of the rest, desiring her either to remain or return as she thought best, but assuring her that they had all lost the greatest portion of their happiness since her departure, and that for herself in particular she was quite inconsolable.

Paul wrote her a very long letter, in which he assured

her that he would render the garden worthy to receive her; and in like manner as she had interwoven their names in her purse, so would he mingle the plants of Europe with those of Africa.

He sent her some of the fruit of the cocoa-trees of her fountain, which had now arrived to perfect maturity. He added, that he would not send her any of the other seeds of the island, that the desire of seeing its productions once more might determine her to return thither immediately. He importuned her to do this without delay, and thus gratify the ardent wishes of their family, and his own more particularly, as henceforward he could taste no joy at a distance from her.

Paul planted with the greatest care those European grains, and above all, those of the violet and of the scabious, the flowers of which seemed to have some analogy with the character and the situation of Virginia, who had so particularly recommended them to him: but whether they had been corrupted on their passage, or whether, which is more probable, the climate of that part of Africa was not favorable to them, only a very small number of them sprung, and even these never attained a state of perfection.

Envy meanwhile, which frequently even outruns the happiness of man, especially in the French Colonies, soon circulated reports all over the island which gave Paul the greatest uneasiness.

The people belonging to the vessel which had brought Virginia's letter asserted, that she was on the point of marriage. They went so far as to name the nobleman who was to obtain her hand. Nay some even declared that the affair was over, and that they had been witnesses of it.

Paul at first despised these rumours, conveyed by a trading-vessel which often brings false reports from the places at which it touches on its passage; but as many of the inhabitants of the island, from a perfidious pity, officiously interposed to condole with him on this event he

began to give some credit to it. Besides in some of the romances which he had read he saw treachery treated with pleasantry, and as he knew that these books exhibited a faithful picture of the manners of Europe, he was apprehensive that the daughter of Madame de la Tour might have become corrupted, and have forgotten her earlier engagements.

The light which he had acquired made him anticipate misery, and what gave a finish to his suspicions was, that several European vessels had arrived within the year, without bringing any news whatever of Virginia

That unfortunate young man, abandoned to all the agitations of a heart in love, came frequently to see me, in order to confirm or to dissipate his uneasiness, by my experience in the world.

I live, as I have told you, about a league and a half from hence, on the bank of a small river which flows by Long Mountain. There I pass my life in solitude, without a wife, without children, and without slaves.

Next to the rare felicity of finding a female partner perfectly suited to a man, the least unhappy situation is that of living alone.

Every one who has had much reason to complain of mankind seeks for solitude. Nay it is very remarkable, that all nations rendered miserable by their opinions, their manners, or by their governments, have produced numerous classes of citizens entirely devoted to solitude and to celibacy.

Such were the Egyptians in their decline, and the Greeks of the Lower Empire; and such are in our days the Indians, the Chinese, the modern Greeks, the Italians, and the greatest part of the eastern and southern nations of Europe.

Solitude in some degree, brings man back to his natural state of happiness, by removing the misfortunes of social life

In the midst of our societies, torn asunder by so many

prejudices, the soul is in a state of perpetual agitation; it is continually revolving within itself a thousand turbulent and contradictory opinions, by which the members of an ambitious and miserable society are aiming at mutual subjection; but in solitude it lays aside those extraneous illusions which disturb it, and resumes the simple sentiment of itself, of nature, and of its author.

Thus the muddy water of a torrent, which lays waste the country, spreading itself into some little bason remote from its current, sinks the miry particles to the bottom of its bed, recovers its former limpidness, and having again become transparent, reflects, together with its own banks the verdure of the earth and the light of the heavens.

Solitude restores the harmony of the body as well as that of the soul.

It is among solitary classes of people that we find persons who live to the greatest age, as amongst the Bramins of India.

In short, I believe it so necessary to happiness, even in the commerce of the world, that I conceive it impossible to taste a durable pleasure in it, be the sentiment what it may, or to regulate our conduct by an established principle, unless we form an internal solitude, from which our own opinion seldom takes its departure, and into which that of another never enters.

I do not however mean to assert that it is the duty of man to live entirely alone, for by his necessities he is united to the whole human race; he for that reason owes his labors to mankind, but he owes himself likewise to the rest of nature.

As God has given to each of us organs exactly suited to the elements of the globe on which we live, feet to the soil, lungs to the air, eyes to the light, without the power of interchanging the use of these senses.

He, who is the author of life, has reserved for himself alone the heart, which is its principal organ.

I pass my days then remote from men, whom I have

wished to serve, and who have repaid me with persecution.

After having travelled over a great part of Europe, and several regions of America and of Africa, I am now settled in this island, poorly inhabited as it is, seduced by the mildness of the air, and by its enchanting solitudes.

A cottage, which I have built in the forest at the foot of a tree, a little field cleared for cultivation by my own hands, and a river which flows before my door, are fully adequate to all my wants, and all my pleasures.

I add to these enjoyments a few good books, which teach me to become better: they even make the world, which I have quitted, still contribute to my happiness, by presenting me with pictures of those passions which render its inhabitants so miserable; and by the comparison which I make between their condition and my own, they procure for me a negative felicity.

Like a man saved from shipwreck, seated on a rock I contemplate in my solitude, the storms which are raging in the rest of the world; nay my tranquillity is increased by the fury of the distant tempest. Since men stand no longer in my way, and as I am no longer in theirs, I have ceased to hate, and now I pity them.

If I meet with any unfortunate wretch, I try to assist him by my counsels: as one passing along the brink of a torrent stretches out his hand to an unhappy creature drowning in it.

I however have found innocence alone attentive to my voice.

Nature to no purpose allures to herself the rest of mankind; each one forms in his mind an image of her, which he invests with his own passions. He pursues through the whole of life, the vain phantom which still misleads him; and he then complains to heaven of the illusion which he had practised upon himself.

Amongst a great number of unfortunate wretches whom I have endeavoured to bring back to nature, I have not

found a single one who was not intoxicated with his own miseries. They listened to me at first with attention, in hopes that I was going to assist them in acquiring either glory or fortune, but perceiving that I only meant to teach them to do without such things, they looked upon me myself as a miserable wretch, because I did not pursue their wretched felicity: they condemned the solitary style of life which I led, pretended that they alone were useful to mankind, and endeavored to draw me into their vortex But though my heart is open to all the world, my opinions are biassed by no one. I frequently find enough within my own breast to make me serve as a lesson to myself.

In my present calm I make a second passage through the agitations of my own past life, which I once prized so highly: the protections, the fortune, the reputation, the pleasures, and the opinions, which maintain a constant conflict all the world over.

I compare those successive tribes of men, whom I have seen contending with so much fury about mere chimeras, and who are now no more, to the little waves of my rivulet, which dash themselves foaming against the rocks of its bed, and then disappear never more to return.

For my own part, I quietly commit myself to the river of time, to be borne down toward the ocean of futurity, which is circumscribed with no shores, and by contemplating the actual harmonies of nature I raise myself toward its author, and thus console myself with the expectation of a destiny more happy in the world to come.

Although the multiplicity of objects which from this elevation now strike our view, are not perceptible from my hermitage, which is situated in the centre of a forest, still the harmonies of that spot are very interesting, especially to a man who like me prefers retiring unto himself to ranging abroad.

The river which flows before my door passes in a straight line across the woods, so that my eye is struck with a long canal, overshadowed with trees of variegated foliage; ta-

tamaques, the ebony-tree, and what is here called apple-wood, olive-wood, and the cinnamon; groves and palm trees here and there raise their long and naked columns more than a hundred feet high; on their tops clusters of palms grow, while they appear like one forest piled above another.

There are likewise lianes of different colored leaves, and which, shooting their branches from one tree to another, form here arcades of flowers, and there long festoons of verdure. Aromatic odours issue from most of these trees and their perfumes attach themselves so strongly to the very clothes, that the smell adheres to a person who has crossed the forest for several hours afterwards.

In the season, when their flowers are in full bloom, you would think them half covered with snow.

At the end of summer several kinds of foreign birds come, by an unaccountable instinct, from unknown regions beyond the bondless ocean, to pick up the seeds of the vegetables which this island produces, and oppose the brilliancy of their colors to the verdure of the trees, em browned by the sun. Among others, different kinds o parroquets, and blue pigeons, which are here called the pigeons of Holland.

Monkeys, the domesticated inhabitants of these forests, amuse themselves among the dusky branches from which they detach themselves by their grey and greenish hair, with their faces entirely black; some suspend themselves by the tail, balancing themselves in the air; others leap from branch to branch, carrying their young ones in their arms.

Never has the murderous fusil scared these peaceful children of nature. Here nothing is heard but sounds of joy, the unknown warblings and the chirping of some southern birds, which repeat the echoes of these forests from afar.

The river which flows bubbling over a rocky bed through the trees, reflects here and there in its limpid

stream, their venerable masses of verdure and of shade, as well as the gambols of the happy inhabitants: about a thousand paces from hence, it precipitates itself down different stories of the rock, and forms in its fall a smooth sheet of water as clear as crystal, which rolling down, breaks itself amidst billows of foam.

A thousand confused noises proceed from these tumultuous waters, and when dispersed by the winds of the forest, they sometimes fly to a distance, and sometimes they rush on the ear all at once, and produce a stunning sound like that of the bells of a cathedral.

The air, continually refreshed by the motion of this stream, keeps up upon the banks of the river, notwithstanding the burning heats of summer, a verdure and a coolness, which are seldom found in this island even on the mountain tops.

At some distance from thence there is a rock, remote enough from the cascade to prevent your being deafened with the noise of its waters, and yet sufficiently near for you to enjoy the sight of their fall, their freshness, and their murmuring.

During the excessive heats, Madame de la Tour, Margaret, Virginia, Paul, and I, sometimes dined under the shade of this rock.

As Virginia always employed her minutest actions for the benefit of others, she never ate a fruit in the country without planting its seed or its kernal in the earth.

'Trees,' said she, 'will spring from these, which may one day give their fruits to some traveller, or at least to some bird.'

Accordingly, once, when she had been eating part of a papaya at the foot of this rock, she planted the seeds of the fruit; there soon afterwards several papayas grew up, among which was a female plant, that is one that bears fruit. This tree, at Virginia's departure, was not so high as her knee, but as its growth is very rapid, it attained three years after to the height of twenty feet, and the

higher part of its trunk was surrounded with several rows of ripe fruit.

Paul having by chance wandered to this place, was greatly delighted at beholding such a large tree, grown from a seed which he had seen planted by the hand of his friend, but at the same time he sunk into a profound melancholy, on observing this testimony of her long absence.

By objects which we habitually behold, we are unable to perceive with what rapidity our life passes away; they as well as ourselves grow old, with an imperceptible decay; but those which we suddenly see again after several years absence, admonish us of the swiftness with which the stream of our days flows on.

Paul was as much surprised, and as sorrowful, at the sight of this large papaya, loaded with fruit, as a traveller is, who on his return to his native country after a long absence, finds those who were his contemporaries to be no more, and sees their children, whom he had left at the breast, themselves become fathers of families.

Sometimes he was going to cut it down, as it made him too sensible of the length of time which had elapsed since Virginia's departure; at other times, considering it as a monument of her beneficence, he kissed its trunk, and addressed to it these words, dictated by love and regret:

'O tree, whose prosperity still exists in our woods, I view thee with more concern and veneration than the triumphal arches of the Romans! May nature, which is daily destroying the monuments of the ambition of kings, multiply, in these forests, those of the beneficence of a young and unfortunate girl.'

It was at the foot of this papaya-tree that I was certain of seeing Paul whenever he came to my habitation.

I one day found him there plunged in melancholy, and I held a conversation with him, which I will repeat to you, unless I tire you by my long digressions; they however

are pardonable in a person of my age, and more so as they have a reference to my late friendship.

I will relate it in form of a dialogue, that you may judge of the excellent natural sense of this young man, and it will be easy for you to discover who is the speaker, by the meaning of his questions and by my answers.

He said to me: 'I am very low spirited. Mademoiselle de la Tour has been gone these three years and a half; and for a year and a half past she has sent us no tidings of herself. She is rich, and I am poor: she has certainly forgotten me. My inclination prompts me strongly to embark for France; I will enter into the service of the king; I will make a fortune, and the grand-aunt of Mademoiselle de la Tour will give me her neice in marriage when I shall have become a great lord.'

OLD MAN.—'My good friend, have you not told me that your birth is ignoble.'

PAUL.—'So my mother has told me; for my own part I do not so much as know the meaning of the word Birth. I never discovered that I was more deficient there than another, or that any other person possessed it more than I do.

OLD MAN.—'Deficiency in point of birth will, in France, effectually exclude you from any distinguished employment: what is more, no corps of any distinction will admit you.

PAUL.—'You have often informed me that one of the chief causes of the present greatness of France was, that the lowest subject might obtain the highest posts; and you have given me many instances of celebrated men, who, rising from a low condition, had done honour to their country. Do you mean to damp my courage?'

OLD MAN.—'My son, nothing is farther from my intention: I told you the truth, but it related to times past.'

'The face of affairs in France is at present greatly altered; every thing there is now become venal; all is the hereditary property of a small number of families, or is di

sided among incorporated associations. The king is a luminary surrounded by the nobility, and by different corps, as by so many clouds, and it is hardly possible that one of his rays should fall upon you. Formerly, in an administration ess complicated, such phenomena were to be seen. Then talents and merit were disclosed on every side, as the fresh grounds, which have just been cleared, are productive with all their rich juices. But great kings who know mankind, and how to make choice among them, are very rare. Kings in general allow themselves to be biassed by the grandees, and by the associations that surround them.'

PAUL.—' But probably I shall find one of those great men, who will take me under his protection.'

OLD MAN.—' The protection of the great is to be obtained only by serving either their ambition or their pleasure. You can never succeed with them, for your birth is mean, and your probity is untainted.'

PAUL.—' But I will perform actions so daring, I will keep my promises so inviolate, I will so punctually fulfil the duties of my situation, I will be so zealous and so constant in my friendships, as to merit adoption from some of them which I have observed to be the case in those ancient histories which you gave me to read.'

OLD MAN.—' Ah, my good friend! among the Greeks and Romans, even in their decline, the higher orders of men always paid respect to virtue; we have indeed a great number of celebrated personages of all descriptions starting up from among the common people, but I do not know of a single one who has been adopted into a family of rank. Were it not for our kings, virtue would in France be condemned to an eternal plebeianism. As I have often told you, they sometimes honor virtue when they perceive it; but in the present day, the distinction which in justice it ought to obtain, is to be purchased only with money.'

PAUL.—' In case then I do not procure support from

the great, I will endeavour to render myself useful to some corps. I will adopt its spirit and its opinions entirely; I will make myself to be beloved.'

OLD MAN.—' You will act then like other men! you will sacrifice your integrity to purchase fortune.'

PAUL.—' Oh, no! the search of truth shall be my only aim.

OLD MAN.—' Instead of making yourself to be beloved, you will most probably expose yourself to hatred. Beside, incorporated associations interest themselves very little in the discovery of truth. To the ambitious, every opinion is indifferent, provided they domineer.'

PAUL.—' How unfortunate am I! I am discouraged on every side. I am doomed to pass my life in labour and obscurity, far from Virginia.' And he heaved a deep sigh.

OLD MAN.—' Let the Almighty be your only patron, and the human race your corps; be firmly attached both to the one and to the other. Families, associations, nations and kings, have their prejudices and their passions, and vice must often be committed in order to serve them as they desire. But to serve God and the human race, we have occasion to exercise virtue alone.'

' But why do you wish to be distinguished from the rest of mankind? It is an unnatural sentiment, for if it were universal, every man would be at war with his neighbour.

' Satisfy yourself with fulfilling the duties of that station in which providence has placed you: rejoice in your destiny, which allows you to maintain your integrity pure, and does not oblige you, in imitation of the great, to place your happiness in the opinion of the lower ranks; nor, in imitation of the lower, to cringe to superiors, in order to procure the means of subsistance.

' You are in a country, and in a situation, where you can find a living without any occasion to deceive, to flatter, or to debase yourself as the generality of those are

obliged to do who pursue fortune in Europe; in a situation, where your condition does not prohibit your exercising any virtue; where you can with impunity be good, faithful, sincere, intelligent, patient, temperate, chaste, indulgent, pious; and where no malignant sneer will interpose to blast your wisdom, which is still only in the bud. Heaven has bestowed on you liberty, health, a good conscience, and friends: kings, whose favour you are so ambitious of obtaining, are not near so happy.'

PAUL.—'Alas! Virginia is still wanting to me: without her I have nothing; with her I should possess every thing. She alone is my birth, my glory, and my fortune; but her aunt must, no doubt, have bestowed her in marriage on a man of high reputation! By means of books and study, however, men may become learned and celebrated: I will acquire knowledge, by dint of intense application: I will render an useful service to my country by my superior illumination, and will neither offend any one, nor be dependent on him; my fame will be illustrious, and the glory which I may obtain will be entirely my own.'

OLD MAN.—'My son, talents are still more rare than either birth or riches; and doubtless they are the most invaluable possessions, because nothing can deprive us of them, and because they universally conciliate public esteem. But they cost a man dear; they are to be obtained only by privations of every kind; by an exquisite sensibility, which renders us unhappy, both at home and abroad, from the persecution of our contemporaries.

'In France, the lawyer does not envy the glory of the soldier, nor the soldier that of the sailor, but every body will thwart you there, because every body piques himself on his understanding.

'You will serve mankind you say. But the person who produces them a single sheaf of corn from the ground, does them a far more profitable service than he who gives them a book.'

PAUL.—'Oh! she who planted this papaya, has given the inhabitants of these forests a much more useful and delightful present, than if she had given them a library.'

And as he spake, he took the tree in his arms, and kissed it with transport.

OLD MAN.—'The best book that ever was written, which inculcates only the doctrines of friendship, equality, humanity and concord, namely, the gospel, has served, for many ages past, as a pretext for the ravages of European cruelty.

"How many public and private tyrannies are daily practised on the Earth in its name! After that who can flatter himself with the hope of being useful to mankind by a book?

'Call to mind what has been the fate of most of those philosophers who preached up wisdom to man.

'Homer, who clothed it in verses so beautiful, was reduced to beg his bread all his life long.

'Socrates, who gave to the Athenians such excellent lessons of it, both by his discourses, and by his manners, was condemned to swallow poison, by the sentence of a court of justice.

'His sublime disciple, Plato, was doomed to slavery by order of the very Prince who protected him; and before their time Pythagoras, who extended his humanity even to the brute creation, was burnt alive by the Crotonians.

'What do I say?

The greatest part of these illustrious names have descended to us disfigured by some traits of satire which characterise them; for human ingratitude delights to lay hold on these; if however, among the crowd, the glory of any one hath reached our ears, pure and untainted, it must have been such as have lived far from the society of their contemporaries; like those statues which are extracted entire out of the fields of Greece and Italy, and which, by being buried in the bosom of the earth, have escaped the fury of barbarians

'You are, then, that to acquire the tempestuous glory of literary fame, it is necessary to exercise much virtue, and to be ready to sacrifice life itself.

'Besides, do you imagine that this glory interests wealthy people in France? they greatly caress literary men, whose learning does not raise them to any dignity in their country, nor to any situation under government, nor procure them admission at court. Persecution is little practised in this age, so indifferent as it is to every thing except fortune and pleasure; but knowledge and virtue seldom raise a person there to a distinguished rank, because every thing in the state is to be procured with money.

'Formerly these qualities were sure of meeting a recompense, by places either in the church, in the magistracy, or in the administration; but at present they are only good for making books.

'This fruit, however, so little prized by the men of the world, is ever worthy of its celestial origin. It is to these very books that the honour is reserved of bestowing lustre on obscure virtue, of consoling the unfortunate, of enlightening nations, and of declaring the truth even to kings.

'It is undoubtedly the most sacred office with which heaven can invest a mortal on this earth.

'Where is the man who has it not in his power to console himself for the injustice, or the contempt of those who have the disposal of fortune, when he reflects that his work will be handed down from age to age, from nation to nation, and will serve as a barrier against error and tyranny; and that, from the bosom of the obscurity in which he has lived, a glory may issue which shall eclipse that of the greatest part of kings, whose monuments sink into oblivion, in spite of the flatterers who reared, and who extol them?'

PAUL.—'Ah! I should covet this glory, only to diffuse its lustre over Virginia, and to render her dear to all the world.

'But you, who have so much experience, tell me whe-

ther we shall ever marry. I wish to be a scholar, at least to know what I am to expect in future.'

OLD MAN.—'Who would wish to live, my son, if he knew what was to befal him hereafter?

'A single foreseen calamity occasions a thousand vain anxieties: the certain prospect of a heavy affliction would embitter all the days which might precede it. Indeed, it is not proper to enquire too deeply even into surrounding objects; heaven, which bestows reflection upon us, that we may foresee our necessities, has also given us necessities to set bounds to our reflection.'

PAUL.—'You tell me that in Europe, dignities and honours are to be purchased with money. I will go and acquire wealth in Bengal, and then direct my course toward Paris, and espouse Virginia. I will go and embark immediately.'

OLD MAN.—'How! will you leave her mother and your own?'

PAUL.—'Why you yourself advised my going to India.

OLD MAN.—'When I gave you that advice, Virginia was here, but at present you are the only support of your mothers.'

PAUL.—'Virginia will send them the means of subsistence from the bounty of her rich relation.'

OLD MAN.—'Rich people assist those only who pay homage to them in the world. They have relations much more to be pitied than Madame de la Tour, and who for want of support from them, sacrifice their liberty for the sake of bread, and pass their lives shut up in a convent.'

PAUL.—'What a dreadful country Europe is? Oh! Virginia must return hither. What occasion has she for a rich relation? How happy she once was under these lowly roofs; how beautiful and how charming, when her head was adorned with a read handkerchief or a wreath of flowers!

'O, Virginia! return, leave thy palaces and thy great-

ness; return to these rocks, to the shade of these woods, and to our cocoa-trees.

'Alas! perhaps at this very moment thou art miserable.

Saying this, he burst into tears.

'Father,' cried he, 'conceal nothing from me; if you are unable to tell me whether I shall ever marry Virginia, inform me at least whether she still loves me, though surrounded by great men who talk to the king, and who visit her.'

OLD MAN.—'Yes, my friend, I am convinced by many reasons that she loves you, but principally by this, that she is virtuous.'

At these words he clasped me round the neck, transported with joy.

PAUL.—'But do you believe European women to be so inconstant as they are represented on the stage and in those books which you have lent me?'

OLD MAN.—'In those countries where men tyrannize, the women are always inconstant. Violence ever produces deceit.'

PAUL.—'How is it possible for a man to exercise tyranny over a woman?'

OLD MAN.—'By forcing women into a marriage without any regard to their own inclinations; a young girl to an old man, a woman of feeling to a man of insensibility.

PAUL.—'Why do they not rather unite those together who are more suitable to each other; the young with the young, and lovers with those on whom their affections are fixed?

OLD MAN.—'The reason is, that in France the generality of young men have not sufficient fortune to enable them to marry, and that they seldom acquire a competency till they are advanced in years. In youth they seduce the wives of their neighbors, and when old they are unable to secure the affections of their own wives. When young they deceived others, and when old, are in their turn themselves deceived.

'It is one of the re-actions of that universal justice which governs the world: one excess always balances another.

Thus most Europeans pass their lives in a two-fold disorder, and this disorder is increased in a society proportionably as riches are accumulated on a smaller number of individuals.

'The state resembles a garden, in which small trees are unable to arrive at perfection if others too great overshadow them; but there is this manifest difference, that the beauty of a garden may result from a small number of large trees, but the prosperity of a state ever depends on the multitude and equality of the subjects, and not on a small number who monopolizes its wealth.'

PAUL.—'But why is want of money a hinderance to marriage?

OLD MAN.—'Because after a man has entered into that state, he wishes to pass his days in abundance, without the necessity of laboring.'

PAUL.—'And why not labor? I myself work very hard.'

OLD MAN.—'The reason is, that in Europe manual labor is deemed dishonorable. It is there called mechanical labor: nay that of cultivating the ground is esteemed the most despicable of all. There the artisan holds a far higher rank than the peasant.

PAUL.—'How! the art which supplies man with food despised in Europe! I do not understand you.'

OLD MAN.—'Oh! it is impossible for a man educated in a state of nature, to comprehend the depravity of a state of society. Though such a one is able to form in his own mind an exact idea of order, he cannot form one of disorder.

Beauty, virtue and happiness have proportions; deformity, vice and misery have none.'

PAUL.—'The rich then are very happy; no obstacle lies in their way; and on the objects of their love they can bestow pleasures without end.'

OLD MAN.—'They are for the most part insensible to any pleasure because the attainment of it costs them no trouble.

'Does not experience teach you that the enjoyment of repose is purchased by fatigue; that of eating, by hunger; that of drinking by thirst? In like manner that of loving, and of being beloved, is only to be obtained by a multitude of privations and sacrifices.

'Their wealth deprives rich people of all these pleasures, by outrunning their necessities.

Add, besides, to the disgust which always follows satiety, that pride which springs from their opulence, and which the least privation wounds, even when the greatest enjoyments have ceased to flatter it.

'The perfume of a thousand roses only pleases for a single moment, but the pain inflicted by one of their thorns lasts a long time after the wound is received.

'To the rich one misfortune in the midst of many enjoyments is a thorn surrounded by flowers; but, on the contrary, to the poor, one pleasure in the middle of many calamities, is a flower surrounded on every side by thorns. They find a poignant relish in their enjoyments.

'Every effect is heightened by its contrast; nature has balanced all things equally.

'Every thing considered then, which state do you conceive to be preferable, that of having almost nothing to hope for and all to fear, or that of having nothing to fear and every thing to hope? The first of these states is that of the rich; the second that of the poor.

'These extremes however are equally difficult to be supported by man, whose happiness consists in mediocrity and virtue.'

PAUL.—'What do you understand by the word virtue?'

OLD MAN.—'My son, you who support your parents by the labor of your hands have no occasion for a definition of it. Virtue is an effort made upon ourselves, for the good of others, in the view of pleasing God only

PAUL.—'O, how virtuous then is Virginia! Virtue was her aim when she wished to become rich, that she might exercise beneficence; virtue made her leave this island, and virtue will restore her to us.'

The idea of her speedy return kindling the young man's imagination, all his disquietude vanished in a instant.

Virginia had not written because she was on the point of returning: so little time was necessary to sail from Europe, with a fair wind.

He enumerated instances of vessels which had made this voyage of more than four thousand five hundred leagues in less than three months.

The vessel in which she had embarked would not take more than two.

The builders of the present day were so skilful, and the mariners so alert

He talked of the arrangements which he would make for her reception; of the new habitation which he intended to build; and of the pleasures and the agreeable surprise which he would contrive for her every day, when she became his wife; his wife—the idea ravished his senses.

'As for you father,' said he to me, 'you in future shall do nothing but enjoy yourself.

'Virginia possesses wealth, and we can purchase plenty of negroes, who will work for you. You shall be with us always, and nothing shall employ your mind but amusement and pleasure.'

Immediately he flew like one distracted, to communicate to his family the joy with which he himself was intoxicated.

Excessive fears soon succeeded the most sanguine hopes.

Violent passions always plunge the soul into contrary extremes. Frequently on succeeding morning Paul came to see me, overwhelmed with grief. He said to me, 'Virginia has not written to me: had she left Europe, she would certainly have informed us of it.

'Ah! the reports which have been circulated concern-

ing her, are but too well founded: her aunt has certainly married her to some nobleman

'The love of wealth has corrupted her, as is the case with so many others.

'In those books which so well describe the character of the female sex, virtue is merely a subject for romance.

'Had Virginia really possessed virtue, she would not have quitted her own mother and me.

'While I pass my life with my thoughts entirely fixed on her, she has cast me from her remembrance. I am tormenting myself, and she is lost in dissipation. Ah! that thought plunges me into despair. All labour disgusts me, and society becomes a burthen. Would to God that war would break out in India, I would hasten thither, and throw myself into the jaws of death.'

'My son,' replied I, 'that courage which makes us rush on to meet death, is the courage of only a single moment. It is often excited by the vain applause of man.

'There is a species of courage more rare, and still more necessary, which enables us daily to support the misfortunes of life, without a witness, and without praise; what I mean is patience. It rests not on the opinion of another, nor on the impulse of our own passions, but on the will of God. Patience is the courage of virtue.'

'Ah then,' cried he, 'I have no virtue! every thing overwhelms me, and sinks me into despair.'

'Virtue,' replied I, 'always equal, constant, and invariable, is not the portion of mankind. In the conflict of so many passions by which we are agitated, our reason is troubled and obscured; but there are pharoses by which we can rekindle the flame; I mean Letters.

'Letters, my son, are an assistance sent to us from heaven. They are rays of that wisdom which governs the Universe, and which man, inspired by a celestial art, has learned to establish upon this earth. Like the rays of the sun, they enlighten, they comfort, they warm: it is a flame altogether divine.

'Like fire, they direct all nature to our use. By means of them, we unite around us, men and things, times and places.

'By them we feel ourselves recalled to the rules of human life.

'They calm the passions; they repress vice; they rouse virtue by the sacred example of those great men whom they celebrate, and whose honoured images they habitually present to us crowned with respect.

'They are the daughters of heaven, who descend to earth to soothe the misfortunes of the human race. The great writers whom they inspire, have always appeared in times the most difficult for human society to subsist, the times of barbarism and of depravity. My dear son, letters have afforded consolation to an infinite number of men, far more miserable than you are; Xenophon, banished from his own country after having brought back to it ten thousand Greeks; Scipio Africanus, exhausted with the relentless calumny of the Roman people,; Lucullus, sickened with their cabals; and Catinat, stung with the ingratitude of a French court.

'The ingenious Greeks assigned the several governments of our various intellectual powers to the several muses, who preside over letters: we ought therefore to resign to them the government of our passions, that they may direct and curb them.

'They ought, with regard to the faculties of the soul, to perform the same functions, with the hours, which yoked and guided the horses of the sun.

'Apply yousrelff, then, my son, to the study of books. Those wise men who have written before us, are travellers who have preceded us in the paths of calamity, who stretch out the hand toward us, and invite us to join their society, when every body else has abandoned us.

A good book is a good friend.'

'Ah!' cried Paul, 'I had no occasion to know how to read when Virginia was here: she had studied no more

than I had done, but when she looked upon me, calling me her friend, it was impossible for me to know what sorrow meant.'

'Doubtless,' said I to him, 'there can be no friend so agreeable as a mistress who loves reciprocally.

'There is besides in woman a lively gaiety, which dissipates the pensiveness of man. Her graces make the dark phantoms of reflection to fly away. On her countenance are depicted the gentle attraction of confidence.

'What joy is not heightened by her joy? What forehead is not smoothed when she smiles? What wrath can repel her tears?

'Virginia will return with more philosophy than you possess; she will be greatly surprised at not finding the garden entirely restored; she, whose thoughts are fixed on embellishing it, in spite of the persecutions of her relation, while far from her mother, and far from you.'

"The idea of the approaching return of Virginia renovated the courage of Paul, and brought him back to his rural occupations. Happy in the midst of his perturbation, in proposing to his exertions an end congenial to his predominant passion.

"One morning at day-break, it was the 24th of December, 1752, Paul on rising perceived a white flag hung out on Mount Discovery. This flag was the signal that a vessel was descried at sea.

"He immediately flew to the city, to learn if it brought any intelligence of Virginia.

"He remained there till the return of the pilot of the port, who, according to custom, had got out to reconnoitre her.

"This man did not come back till the Evening. He reported to the governor, that the vessel which they had hailed was the Saint Gerard, of about seven hundred tons burthen, commanded by a captain named M. Aubin; that she was four leagues distant at most, and that she could not come to her moorings off Port Louis, till the next day

in the afternoon, if the wind was fair. It was then a dead calm.

"The pilot then delivered to the governor the letters which the vessel had brought from France. Among others there was one in Virginia's hand-writing for Madame de la Tour.

"Paul seized it immediately, and having kissed it with transport, put it in his bosom, and flew to the plantation.

"As soon as he could perceive the family from afar, who were waiting his return on Rock Farewell, he raised the letter into the air, without the power of uttering a syllable: immediately the whole family assembled round Madame de la Tour to hear it read.

"Virginia informed her mother that she had experienced very harsh treatment from her grand-aunt, who had attempted to force her into marriage, had afterwards disinherited her, and then turned her away, at a time which would not permit her to arrive at the Isle of France till the hurricane season: that she had to no purpose endeavoured to soften her, by representing what she owed to her mother, and to the connections of her early life; that she had been treated by her as a girl whose head was turned by reading romances; that at present her only wish was once more to see and embrace her dear family, and that she would have gratified this ardent wish that very day, if the captain would have allowed her to embark in the pilot-boat, but that he had opposed her departure, on account of the distance of the shore, and of a heavy swell at sea in the offing, not withstanding the stillness of the wind.

"No sooner was this letter read, than the whole family transported with joy, cried out: 'Virginia is arrived.'

"Masters and servants embraced each other by turns.

"Madame de la Tour said to Paul: 'My son, go and inform our neighbour of Virginia's arrival.'

"Domingo immediately lighted a flambeau of round-wood and then in company with Paul directed his course toward my habitation.

"It might be about ten o'clock at night: I had just extinguished my lamp, and had lain down to sleep, when I perceived through the pallisades of my cottage a light in the woods.

"Soon after I heard the voice of Paul calling me by name.

"I immediately arose, and was scarcely dressed when Paul, almost distracted and breathless, clasped me round the neck, saying: 'Come, come along, Virginia is arrived.

'Let us hasten to the port, the vessel will anchor there by day-break.'

"We immediately bent our course thitherward. As we were crossing the woods of the Long Mountain, and already on the road which leads from Pamplemousses to the port, I heard the sound of some one walking behind us. It was a negro hurrying on with his utmost speed.

"As soon as he had overtaken us, I asked him whence he came, and whither he was going with such expedition.

"He replied: I come from that quarter of the island which is called Gold Dust, and am dispatched to inform the governor, that a vessel from France has just cast anchor under Amber Island. She is firing guns in token of distress, for the sea is very boisterous.'

"The man having thus spoken immediately hastened forwards.

"I then said to Paul: 'Let us go toward Gold Dust, to meet Virginia; it is only three leagues from hence.'

"We accordingly directed our steps toward the northen part of the island.

"The heat was stifling: the moon had just arisen; three black circles surrounded her.

"A frightful darkness overspread the whole face of heaven.

"By the frequent flashes of lightning we discovered long streamers of thick clouds, gloomy and lowering at no great height, piled one above another toward the middle of the island, which rushed from the sea with an

amazing rapidity, although on land not the least breath of wind was stirring.

"Hastening onwards, we thought we heard the roaring of thunder, but on listening more attentively we discovered it to be the report of cannon, reverberated by the echoes.

"The noise of the distant firing, joined to the tempestuous appearance of the heavens, made me shudder.

"I had no doubt that it was a signal of distress from some vessel on the point of foundering. About half an hour afterwards the first ceased, and this silence struck me as much more awful than the mournful sounds which had preceded it.

"We quickened our pace without saying a word, not daring to communicate our uneasiness to each other.

"Toward midnight we arrived in a violent heat on the sea-shore, at the quarter called Gold Dust. The waves dashed themselves against it with a fearful noise.

"The foam of a dazzling whiteness, and sparkling like fire, covered the rocks and shores. Notwithstanding the darkness, we could distinguish, by these phosphoric lights, the canoes of the fishermen, which they had long before drawn a great way up on the strand.

"At some distance from thence, at the entrance of the wood, we descried a fire, round which several of the planters were assembled.

"We went thither to rest ourselves, and to wait for the return of day.

"Whilst we sat by the fire, one of the planters told us, that the preceding afternoon he had seen a vessel at sea, borne toward the island by the currents; that the shades of night had concealed her from his view, and that two hours after sun-set he had heard the firing of cannon, as a signal calling for assistance, but that the sea ran so high, no one could send out a boat to her relief: that soon after, he could perceive their lanterns lighted up, and in that case he was afraid the vessel having come so near the shore, might have passed between the main land and the little Isle

of Amber, mistaking the latter for Mire Point, near which the vessels arriving at Port Louis are accustomed to pass; that if it were so, which however he could not absolutely affirm, the vessel must be in the greatest danger.

Another planter then spake, and told us that he had several times passed through the channel which separates the Isle of Amber from the coast; that he had sounded it, and found that the mooring and anchoring ground were excellent; and that the vessel would be as safe there as in the most secure harbour. 'I would risk my whole fortune in her,' added he, 'and could sleep as soundly as if I were on dry land.'

A third person asserted that it was impossible for a vessel of that size to enter the channel, as even boats could with difficulty navigate.

He said that he had seen her anchor beyond the Isle of Amber, so that if the breeze sprung up in the morning, she would have it in her power either to put to sea again, or to gain the harbour. Other planters delivered various opinions.

Whilst they were disputing among themselves, as is very customary with idle Creoles, Paul and I kept a profound silence.

We remained there till peep of dawn, but then there was too little light in the heavens to admit of our distinguishing any object at sea, which besides was covered with a thick fog; we could only descry to windward a dusky cloud, which they told us was the Isle of Amber, situated at a quarter of a league distance from the coast.

We perceived no object by this gloomy light but the point of land where we were, and the peaks of some of the mountains of the interior of the island, appearing from time to time in the midst of the clouds which floated around them.

About seven in the morning we heard the sound of drums in the woods; it was the governor, M. de la Bourdonaye, who came on horseback, attended by a detach-

ment of soldiers armed with muskets, and by a great number of planters and negroes.

He drew up the soldiers on the beach, and ordered them to fire a volley.

Scarcely had they done so, when we perceived on the sea a flash of light, almost immediately succeeded by the report of a cannon.

We concluded that the vessel was at no great distance from us, and we all flew to that quarter where we had seen her signal.

We then discerned through the mist the hull and sail-yards of a large vessel.

We were so close to her that notwithstanding the roaring of the sea, we distinctly heard the boatswain's whistle, and the voices of the sailors, who gave three cheers of Long live the King: for this is the exclamation of Frenchmen, when in extreme danger, as well as amidst their greatest rejoicings; as if they meant to call their Prince to their assistance in perilous seasons, or as if they intended even then to declare, that they were ready to meet death for his sake.

From the moment that the Saint Gerard perceived we were within reach of giving her assistance, she went on firing a gun every three minutes

M. de la Bourdonaye ordered large fires to be kindled here and there along the strand, and sent to all the inhabitants of the neighborhood in quest of provisions, planks, cables, and empty casks.

A multitude soon arrived, accompanied by their negroes, loaded with provision and cordage, who came from the plantations of Gold Dust, the quarter of the Marsh, and from Rampart River.

One of the oldest of those planters approached the governor, and thus addressed him: 'Sir, deep sounds have all night long been heard in the mountain. In the woods the leaves are violently agitated, though there is not a breath of wind stirring. The sea-birds are flocking in

crowds to take refuge on the land; surely all these signs announce the approach of a hurricane.'

'Well, my friend,' replied the governor, 'we are well prepared for it, and surely the vessel is so likewise.'

In truth the whole appearance of nature presaged an approaching tempest.

The clouds distinguishable in the zenith, were at their centre awfully black, and their edges of a copper color.

The air resounded with the screams of the paillençu, the frigate, the water-cutter, and a multitude of other fowls, which notwithstanding the gloom of the atmosphere flocked from all points of the horizon to seek a shelter in the island.

Toward nine o'clock in the morning, fearful noises were heard from the sea, as if torrents of water mingled with the roaring thunder, were rushing from the mountain-tops.

The whole company exclaimed: 'There's the hurricane!' and at the same moment, an awful whirlwind carried off the fog which overspread the Isle of Amber and its channel.

The Saint Gerard was then plainly descried, her deck crowded with people, her yards and round-tops lowered, her flag hoisted, four cables on her forecastle, and one to keep her fast a-stern. She had anchored between the Isle of Amber and the main land, within the shelvy enclosure which surrounds the Isle of France, and which she had weathered through a channel that no vessel had ever passed before.

She presented her bows to the billows, which rolled on from the main ocean; and at every surge which forced it's way into the channel, her prow was elevated to such a height, that her keel was perceptible in the air; but by this motion, her stern plunging downward, disappeared from view to its very carved work, as if it had been entirely swallowed up. In this situation, in which the winds and the waves were driving her toward the shore, it was

equally impossible to return through the track by which she had entered, or by cutting her cables, to run a-ground upon the shore, from which she was separated by a deep bottom, sown thick with shelving rocks.

Every billow which broke against the coast, rushed on roaring to the very bottom of the bay, and tossed the pebbles more than fifty feet up the shore; then retiring backwards discovered a great part of its bed, the stones of which were dashed backwards and forward with a rough and horrible noise.

The sea, swelled by the winds, increased every moment, and the whole channel between this island and the Isle of Amber, appeared to be an immense sheet of white foam, hollowed into deep and dusky waves.

This foam collected itself at the bottom of the creeks to the height of more than six feet, and the winds, which brushed along its surface, carried it beyond the steep cliffs of the shore more than half a league into the island.

At sight of these innumerable white flakes, which were driven in a horizontal direction to the very foot of the mountains, you would have thought that hills of snow were rushing from the sea.

The horizon presented every symptom of a lengthened tempest: the heavens and the sea seemed to be confounded in it with each other.

There were incessantly detached from it clouds of a fearful appearance, which flew along the zenith with the velocity of birds; whilst others appeared in it immoveable like enormous rocks.

Not a single spot of azure was perceptible in the whole firmament; a pale and olive-coloured glare was all that illuminated the objects on the earth, on the sea, and in the heavens.

By the violent straining of the vessel, what we feared at length took place.

The cables on her bows snapped; and as she then rode by a single hawser, she was dashed upon the rocks half a

cable's length from the shore. One scream of grief burst from every breast.

Paul was hastening to throw himself into the sea, when I seized him by the arm. 'My son,' said I to him, 'are you determined to destroy yourself?'

'Oh! let me go to her assistance,' cried he, 'or let me die!'

As despair had overpowered his reason, Domingo and I, to prevent his destruction, tied round his middle a long cord, one of the extremities of which we held fast.

Paul then advanced toward the Saint Gerard, sometimes swimming, sometimes walking on the shallows.

Sometimes he had the hope of getting on board, for the sea, in these irregular movements, left the vessel nearly dry, so that you might almost walk round and round her: but presently returning with renovated fury, it covered her with enormous arches of water, which carried away the whole fore-part of her bottom, and dashed the unhappy Paul a great way up the shore, his legs bleeding, his chest bruised, and himself half-drowned.

Scarcely had this young man recovered the use of his senses, when he got up again, and returned with redoubled ardour toward the ship, which the sea, meanwhile, had torn asunder with unremitting attacks.

Upon this, the whole crew despairing of safety, threw themselves in crowds into the sea; some on masts, on planks, on hen-coops, on tables, and on casks.

Then appeared an object worthy of eternal regret; a young lady was seen on the stern-gallery of the Saint Gerard, stretching out her arms toward him who was making so many fruitless efforts to join her.

It was Virginia. She soon discovered her lover by his intrepidity.

At sight of this amiable girl, exposed to perils so dreadful, we were overwhelmed with sorrow and despair.

As for Virginia, with a noble and dignified air, she

waved her hand toward us, as if to bid us an eternal farewel.

The sailors had all thrown themselves into the ocean. One alone remained on the deck, who was entirely naked, and strong as Hercules.

He approached Virginia respectfully: we saw him throw himself at her knees, and even endeavour to persuade her to pull off her clothes; but she, repelling him with dignity, turned her face the other way. The air resounded with these redoubled cries of the spectators: 'Save her! oh, save her! do not, do not, quit her!'

But at the same moment, a mountain of water of an enormous size, engulphed itself between the Isle of Amber and the coast, and advanced roaring toward the vessel, which it menaced with its dusky sides and foaming summits.

At this awful spectacle, the sailor flung himself alone into the sea, and Virginia perceiving death inevitable, placed one hand on her clothes, and the other on her heart; then raising her placid eyes toward heaven, she seemed an angel going to take flight toward the celestial regions.

Oh, day of horror! Alas! all was swallowed up. The surge dashed far up the shore a part of the spectators, whom an emotion of humanity had prompted to advance toward Virginia, as well as the sailor who had attempted to preserve her by swimming.

This man, escaped from almost certain death, kneeled down upon the strand, saying: 'Oh, my God, thou hast preserved my life; but I would have sacrificed it willingly to save that of the excellent young lady, who, with all my persuasion, would not be prevailed on to undress herself as I did.'

Domingo and I drew out from the waves the unfortunate Paul, entirely deprived of recollection, whilst the blood gushed from his mouth and ears. The governor put him under the care of surgeons, while he traversed the

sea-shore to see whether the billows had not borne the body of Virginia thither; but the wind having suddenly changed, as is very customary in the case of hurricanes, we had the mortification of reflecting that we should not have it in our power to render this unfortunate young woman even the rites of sepulture.

We hastened from the spot overwhelmed with sorrow, our minds entirely engrossed with the loss of one person, in a shipwreck, where so many had perished; the greater part doubting, from an end so disastrous befalling a young woman of such exalted virtue, whether a providence existed at all; for there are calamities so dreadful, and so unmerited, that the confidence even of the wisest is frequently staggered.

Meanwhile they had placed Paul, who now began to recover the use of his senses, in an adjoining house, till his situation permitted him to be carried to his own home.

As for me, I was returning with Domingo, in order to prepare Virginia's mother, and her friend, for this calamitous event, when, on our arrival at the entrance of the valley of the river of the Lataniers, some negroes informed us, that the sea was driving a great deal of the wreck of the vessel up the opposite bay.

We descended thither, and one of the first objects which we descried upon the shore, was the body of Virginia.

It was half covered with sand, and in the very attitude in which we had seen her perish.

There was no sensible alteration in her features. Her eyes were closed, but serenity sat upon her forehead; only the pale violet of death blended itself upon her cheeks with the rose of modesty.

One of her hands lay upon her clothes; the other which clung to her breast, was firmly closed and stiff. I disengaged from it, with much difficulty, a little casket; but how was I astonished when I perceived in it the portrait

which Paul had given her, and which she had promised him never to part with while she lived.

At this last token of the constancy and the love of this unhappy maid, I wept bitterly.

Domingo, beating his breast, pierced the air with his mournful cries.

We then carried the body to a fisherman's hut, where we gave it in charge to some poor Malabar women, who washed it carefully.

Whilst they were performing this sad office, we ascended trembling toward the plantation.

We there found Madame de la Tour and Margaret at prayer, in expectation of news concerning the vessel.

As soon as the former perceived me, she exclaimed, 'Where is my daughter? my beloved Virginia? my child?'

As my silence and my tears but too well informed her of the calamity which had happened, she was suddenly seized with a suffocation and agonizing spasms; her voice could be distinguished only in sighs and sobbing.

Margaret exclaimed: 'Where is my son? I do not see my son;' and fainted away.

We hastened to her, and having brought her to herself, I assured her that Paul was alive, and that the governor had taken proper care of him. She recovered the use of her senses, only to devote her attention to the assistance of her friend, who from time to time fell into long fainting fits.

Madame de la Tour passed the night in these cruel paroxysms, and by the length of their duration, I have judged that nothing equals the sorrow of a mother.

When she recovered her reason, she fixed her mournful eyes stedfastly toward heaven.

In vain did Margaret and I press her hands between ours; in vain did we address her by the most tender appellations; to all these testimonies of our ancient affec-

tion, she appeared totally insensible, and nothing but deep groans proceeded from her oppressed bosom.

The next morning they brought Paul home, stretched along in a palanquin.

Reason had resumed its empire, but his voice was entirely lost. His interview with his mother and Madame de la Tour, which at first I had been apprehensive of, produced a better effect than all the care which I had hitherto taken. A ray of comfort beamed on the countenances of these unhappy mothers. They both approached him, clasped him in their arms, kissed him; and those tears which had been till then restrained through excess of sorrow, now began to flow.

Paul soon mingled his with theirs. Nature being thus disburdened in these three unhappy beings, a languid oppression succeeded to the convulsions of their grief, and procured for them a lethargic repose, which bore in truth a strong resemblance to death.

Meanwhile M. de la Bourdonaye sent a messenger to me privately, informing me that the body of Virginia had by his order been conveyed to the city, and that from thence he meant to have it carried to the church of Pamplemousses.

I immediately went down to Port Louis, where I found the inhabitants assembled from all parts to assist at the funeral, as if the island had lost the most precious treasure which it contained.

In the port, the ships had their sail-yards laid across, their flags half hoisted up, and they were firing minute guns.

The grenadier company opened the funeral procession. They carried their arms inverted, their drums, covered with long pieces of crape, emitted only sounds of woe: grief sat strongly depicted on the countenances of those warriors, who had a thousand times braved death in the field with undaunted courage.

Eight young ladies of the most considerable rank in the

island, clothed in white, and holding palm-boughs in their hands, bore the body of their virtuous companion, strewed over with flowers. A choir of little children followed it, chanting hymns; then after them the officers of higher rank, and the principal inhabitants of the island, and last of all the governor himself, followed by a crowd of the common people.

Thus far had government, interposed, in ordering that some honours might be rendered to the virtues of Virginia.

But when the body had arrived at the foot of this mountain, at the sight of those very huts the happiness of which she had so long constituted, and which her death had filled with sorrow, the whole funeral ceremony was deranged; the hymns and the chanting ceased; nothing was now to be heard in the plain but sighs and sobs.

Crowds of young girls, belonging to the neighbouring plantations, hastened to spread over the coffin of Virginia handkerchiefs, chaplets, and wreaths of flowers, invoking her as if she had been a saint. Mothers prayed heaven to bestow on them daughters like her; the young men mistresses as constant; the poor a friend as affectionate, and the slaves a mistress as kind.

When they had arrived at the place destined for her interment, the negresses of Madagascar, and the Cafres of Mosambique, placed baskets of fruit around her body, and suspended pieces of stuff on the neighbouring trees, according to the custom of their country.

The Indians of Bengal, and those of the coast of Malabar, brought cages of birds, which they set at liberty over her corpse; to such a degree does the loss of a beloved object interest all nations, and such a power does unfortunate virtue possess, seeing it attracts and unites all religions around its tomb.

It was necessary to place a guard near her grave, to keep back some of the daughters of the poor inhabitants, who were rushing to throw themselves into it, declaring

that in this world their sorrow would admit of no consolation, and that nothing now remained for them but to die with her who had been their only benefactress.

She was interred near the church of Pamplemousses, on its western side, at the foot of a tuft of bamboos, where in going to mass with her mother and Margaret, she delighted to repose, seated by the side of him whom she then used to call brother. On returning from the funeral ceremony M. de la Bourdonaye ascended this mountain, followed by a part of his numerous retinue. He tendered to Madame de la Tour and her friend all the assistance in his power; he expressed himself in few words but with great indignation against her unnatural relation; approaching Paul, he said every thing which he thought could have a tendency to console him: "I was anxious to contribute to your happiness, and that of your family," said he, "heaven is witness of my sincerity. My friend, you must go to France; I will procure you employment there; during your absence I will take as much care of your mother as if she were my own." At the same time he held out his hand to him, but Paul drew back his and turned his head aside that he might not see him. As for myself, I remained in the dwelling of my unfortunate friends, administering to them, as well as to Paul, all the assistance I could.

At the end of three weeks he was able to walk, but mental depression seemed to increase in proportion as his body grew stronger: he was insensible to every thing; his looks were languid, and he did not answer a syllable to all the questions which were put to him. Madame de la Tour, who was in a dying condition, frequently said to him, "My son, so long as I see you, I think I behold my dear Virginia." At the name of Virginia he started up and hastened from her, in spite of the entreaties of his mother, who called him back to her friend. He wandered alone to the garden, and seated himself at the foot of Virginia's cocoa-tree, with his eyes stedfastly fixed on her fountain. The governor's surgeon who had taken the

greatest care of him and of the ladies, told us, that in order to remove the gloomy melancholy which had settled on his mind, we ought to allow him to do every thing that he pleased, without contradicting him in any respect, for this was the only means of vanquishing that silence which he so obstinately preserved. I resolved to follow his advice. As soon as Paul felt his strength in some degree restored, the first use he made of it was to retire from the plantation. As I did not wish to lose sight of him, I walked behind, and desired Domingo to bring some provisions, and to accompany us; in proportion as the young man descended from this mountain, his joy and his strength seemed to revive; he at first bent his course towarde Pamplemousses, and when he had arrived at the church, in the bamboo-alley, he went directly to the spot where he saw the earth had been newly dug up, there he kneeled down, and raising his eyes to heaven offered up a long prayer. This action appeared to me a happy presage of returning reason, as this mark of confidence in the Supreme Being was a proof that his soul began to resume its natural functions. Domingo and I fell down on our knees after his example, and prayed with him; at length he arose and walked to the northern part of the island, without paying much attention to us.

As I knew that he was entirely ignorant, not only where the body of Virginia was deposited but also whether or not it had been saved from the sea, I asked him why he had been praying to God at the foot of the bamboos: he replied, "We have been there together so often!" He continued his journey to the entrance of the forest, where night overtook us; there I persuaded him by my example to take some nourishment; we then reposed ourselves upon the grass at the foot of a tree.

The next day I was in expectation that he would direct his steps homewards again; in truth, he fixed his eyes for some time from the plain, on the church of Pamplemousses, with its long rows of bamboos, and made some movements

o return thither, but he suddenly buried himself in the forest, always directing his course toward the north. I penetrated his intention, and in vain endeavoured to dissuade him from it. We arrived about mid-day at Gold Dust; he hastily descended to the sea-shore, exactly opposite to the place where the Saint Gerard had perished; at sight of the Isle of Amber and its channel, then as smooth as a mirror, he exclaimed "Virginia! oh, my beloved Virginia!" and then fell down in a swoon. Domingo and I carried him to the interior of the forest, where we with much difficulty brought him to himself. When he had recovered his senses, he was preparing to return to the sea-shore, but I entreated him not to renew his own grief and ours by such cruel recollections, and he took another road. In short, for eight days together he rambled to all those places which he was accustomed to frequent with the companion of his infancy; he wandered along the path through which she had gone to ask pardon for the slave of the Black River, he then visited the borders of the river of the Three Paps, where she sat down when unable to walk any farther, and that part of the wood in which she had been lost. Every place that recalled to his mind the inquietudes, the sports, the repasts, and the beneficence of his much-loved Virginia; the river of the Long-Mountain, my little habitation, the neighbouring cascade, the papaya which she had planted, the mossy ground where she delighted to run, and the cross-paths of the forest where she loved to sing, each by turn caused his tears to flow; the very echoes which had so often repeated the sounds of their mutual joy, now resounded with nothing but these mournful cries, "Virginia! Oh, my beloved Virginia!"

In this wild and wandering way of life, his eyes grew hollow, his colour faded, and his health gradually but perceptibly declined.

Being firmly persuaded that the sentiment of our misfortunes is redoubled by the remembrance of the pleasures which we once enjoyed, and that solitude only gives an edge

to the passions, I resolved to remove my unfortunate friend from the places which excited the recollection of his loss, and to convey him to some part of the island where there were objects to dissipate his melancholy.

For this purpose I conducted him to the inhabited heights of William's quarter, where he had never been before. Agriculture and commerce then spread much bustle and variety over this island; there were many companies of carpenters who squared the trees into logs, and others who were sawing them into planks; carriages came and went along the roads; large flocks of oxen and horses fed in the extensive pastures, and the fields were filled with habitations. The depth of the soil in several places admitted of the cultivation of many kinds of European vegetables. You might see here and there harvests of corn in the plain, beds of strawberries in the openings of the woods, and hedges of rose-trees along the highway. The coldness of the air, by giving tension to the nerves, was even favourable to the health of the whites.

From these heights, situated in the middle of the island, and surrounded with thick woods, you can discover neither the sea, nor Port Louis, nor the Pamplemousses, nor any thing which could recal to Paul's mind the remembrance of Virginia; the very mountains, which present different branches on the side of Port Louis, offer nothing to view on the side of William's Plain but a long promontory, in a straight and perpendicular line, out of which many lofty pyramids of rocks elevate themselves, and collect the clouds around their peaks.

It was to these plains accordingly that I conducted Paul. I kept him continually in action, walking with him in sunshine and in rain, by day and by night, leading him into the woods and over the fresh-ploughed ground and the fields, in order to amuse his mind by the fatigue of his body, and to deceive his reflections by ignorance of the place where we were and of the road which we had left. But the mind of a lover finds every where traces of the

beloved object. The night and the day, the calm of solitude and the noise of habitation, nay time itself, which erases so many recollections, brought no relief to his mind; like the needle, touched by the magnet, which is to no purpose agitated, for as soon as it recovers a state of rest, it points to the pole which attracts it; so when I asked Paul, as we wandered about in William's Plain, "Whither shall we go now?" he turned toward the north, and said "These are our mountains, let us return thither."

I clearly perceived, that all the methods by which I had endeavoured to divert his mind were ineffectual, and that the only resource now left was to attack the passion in itself, by employing to this purpose the whole strength of my feeble reason: I accordingly replied, "Yes, these are the mountains where your beloved Virginia once lived, and there is the portrait which you gave her, and which in death she pressed to her heart, the last emotions of which were devoted to thee." I then presented to Paul the little portrait which he had given Virginia on the banks of the fountain of the cocoa-trees. At sight of this a gloomy joy overspread his countenance; he eagerly seized the portrait with his feeble hands, and pressed it to his lips; immediately his breast became oppressed, and to his blood-shot eyes the tears started but were unable to flow. I said to him, "My son, attend to the words of one who is your friend, who was so to Virginia, and who, in the ardour of your expectations, has frequently endeavoured to fortify your reason against the unforeseen calamities of human life. What is it you deplore with so much bitterness of soul? Is it the misfortunes which has befallen yourself? Is it that which has befallen Virginia? The misfortune that has befallen yourself—yes, I grant you it has been very severe. You have lost the most amiable of young women, who would have made the most virtuous of wives, she had sacrificed her own interests to your's, and preferred you to fortune, as the only recompence worthy of her virtue. But how do you know whether the objec-

from whom you expected happiness so pure, might not have proved to you the source of sorrows innumerable? She was dowerless and disinherited: you would have nothing in future to share with her but what the labour of your hands produced. Rendered more delicate by her education, and more courageous by her very misfortunes, you would have seen her daily sinking under the weight of the fatigues which she exerted herself to divide with you; in the event of bringing you children, her troubles and your own would have been greatly increased by the difficulty of supporting with you alone, your aged parents, and a growing family. You may say, 'the governor would have assisted us,' but how do you know whether, in a colony which so often changes its rulers, you would have always found such men as M. de la Bourdonaye? Whether some governor might not have been sent hither, unpolished and unprincipled? Or whether your wife, to obtain some miserable pittance, might not have been obliged to cringe to such a man? Either she would have become frail, and you would have been an object of pity, or she would have maintained her honor, and you must have remained under the pressure of poverty; happy if, on account of her beauty and virtue, you had not been persecuted by those very persons from whom you solicited protection. You may say, I might have enjoyed happiness independent of fortune, by protecting the beloved object who was attached to me, in proportion to her very weakness; by consoling her with my inquietudes, by making her rejoice even in my dejection, and thus causing our love to increase by our mutual sorrows. Doubtless virtue and love do delight in these bitter pleasures. But she is now no more; there still remains to you, however, what next to yourself she loved most, namely, her own mother and your's, whom by your inconsolable affliction you are bringing down to the grave. Make it your happiness to succour them as it was her's.

"My son, beneficence is the happiness of virtue; there is none greater or more certain on the earth. Projects of

pleasures, of repose, of enjoyments, of abundance, and of glory, are not made for feeble man who is only a traveller and a passenger through this world. Behold how a single step toward fortune has precipitated us from one abyss into another! You opposed it I grant, but who of us did not believe that the voyage of Virginia would terminate in her own happiness and in your's? The invitations of a rich and old relation, the advice of a sensible governor, the approbation of a whole colony, the exhortations and the authority of an ecclesiastic, have all concurred in deciding the fate of Virginia.

"Thus we rush on to our own destruction, deceived by the very prudence of those who govern us. It would doubtless have been better had we not believed them, nor trusted to the opinions and the expectations of a deceitful world, but, after all, of so many men whom we see thus busily employed in these plains, of so many others who go in quest of fortune to the Indies, or who, without leaving their own homes, enjoy at their ease in Europe the fruit of the labours of the people here, there is not so much as one but who is destined to lose some day that which he holds most dear—greatness, fortune, wife, children, friends. Most of them have superadded to their loss, the reflection of their own imprudence.; but as for you, when you retire within yourself, you find nothing to reproach yourself with; you have maintained unshaken fidelity; in the flower of youth you have possessed the prudence of a sage in not departing from the sentiment of nature: your views alone were perfectly legitimate, because they were pure, simple and disinterested, and because you had sacred rights over Virginia, which no fortune could compensate. You have lost her, but it is not your imprudence, nor your avarice, nor your false wisdom, which occasioned that loss, it is God himself, who has employed the passions of another to deprive you of the object of your love; that God from whom you receive every thing, who sees what is proper for you, and whose wisdom has not left you in any place

for the repentance and despair which ever follow in the train of those evils which we have brought upon ourselves. This is what you can say to yourself under the pressure of your affliction—I have not merited it. Is it then the misfortune which hath befallen Virginia, her end, her present condition, that you deplore? She has submitted to the decision reserved for birth, for beauty, and even for empires themselves. The life of man, with all its projects, rears itself like a little tower, to which death applies the finishing stroke: the moment she was born she was condemned to die; happy in having resigned her life before her mother, before your's, and before yourself, that is, in not having suffered many deaths before the final one. Death, my son, is a blessing to all mankind; it is the evening of that restless day which we call life; it is in the sleep of death that the diseases, the griefs, the vexations and the fears which incessantly agitate unhappy mortals repose for ever.

Examine those men who appear the most happy, and you will find that they have purchased their pretended enjoyments very dearly: public respectability by domestic distresses; fortune by the loss of health; the real pleasure of being beloved by continual sacrifices; and often at the close of a life devoted to the interests of another, they see nothing around them but false friends and ungrateful relations. But Virginia was happy to the last moment of her's; she was so whilst among us by those blessings which nature bestows; at a distance from us by those of virtue; even in that dreadful moment when we saw her perish, she was still happy, for whether she cast her eyes on a colony in which she was going to cause universal desolation, or upon you who rushed with such intrepidity to her assistance, she clearly perceived how dear she was to us all. She was prepared to meet the future, by reflecting on the innocence of her past life, and she then received the reward which heaven reserves for virtue, a courage superior to danger. She encountered death with a serene

countenance. My son, the Almighty has decreed to virtue the power of supporting all the events of human life, to let us see that it alone can make the proper use of them, and find in them felicity and glory. When he reserves for it an illustrious reputation, he elevates it on a great theatre, and sets it a conflicting with death; then its courage serves as an example, and the remembrance of its misfortunes receives a tribute of tears from posterity which lasts for ever; this is the immortal monument reserved for it, upon a globe where every thing passes away, and where even the memory of the generality of kings is speedily buried in everlasting oblivion. But, Virginia exists still: observe, my son, how every thing on the earth changes, and yet that nothing is lost; no human skill can annihilate the smallest particle of matter, and could that which was rational, sensible, susceptible of love, virtuous, religious, have perished, when the elements with which it was invested are not liable to destruction. Ah, if Virginia enjoyed happiness once in our society, how much more does she enjoy now! There is a God, my son; all nature announces it; there is no occasion to prove it to you; nothing but the wickedness of men could make them deny a justice which they contemplate with terror. A sentiment of him is in your heart, just as his works are before your eyes; can you believe then that he will leave Virginia without a recompence? Can you believe that the same power which clothed a soul so noble in a form so beautiful, in which such divine skill was clearly perceptible, was not able to have saved her from the waves? that he who has arranged the actual happiness of man by laws of which you are entirely ignorant, could not prepare another for Virginia by laws equally unknown to you? Before we were created, if we had possessed the faculty of thinking, could we have formed any idea of our future being! and now that we are in this dark and fugitive existence, can we foresee what is beyond death, through which we must make our transition from it? Has the Almighty occasion, like man, for this little

globe of earth, to serve as the theatre of his wisdom and goodness, and is he capable of propagating human life only in the plains of death? There is not a single drop of water in the ocean but what is filled with living creatures, which have all a reference to us, and does nothing exist for us among all those stars which revolve over our heads! What, is there no supreme intelligence and divine goodness in any spot but precisely that where we are; and in those radiant and innumerable globes, in those vast plains of light which surround them, and which are never obscured by darkness or tempest, do you believe there is nothing but empty space and an eternal non-existence!

If we, who could give nothing to ourselves, durst set bounds to that power from whom we have received every thing, we might believe ourselves to be stationed here upon the limits of his empire, where life is ever struggling with death, and innocence without tyranny.

Without doubt there is somewhere a place in which virtue receives its reward. Virginia now is happy. Ah! if from the abode of angels she could communicate to you her thoughts she would say, as she did in her last farewell, "Oh, Paul, life is only a state of probation; I have been found faithful to thelaws of nature, of love, and of virtue. I crossed the seas in obedience to my relations; I renounced riches to preserve my fidelity; and I have preferred death to the violation of modesty. Heaven has decreed that the career of my earthly existence has been sufficiently filled up; I have for ever made escape from poverty, from calumny, from tempests, and from the painful spectacle of the woes of others. None of those ills which terrify mankind can ever in future affect me; and yet you pity me! I am pure and unsusceptible of change as a particle of light, and you wish to recal me to the gloomy night of life! Oh, Paul, Oh my friend, call to mind those days of happiness when in the morning we enjoyed the beauty of the heavens, rising with the sun on the peaks of these rocks, and diffusing

itself with its radiations over the bosom of our forests. We experienced a felicity the cause of which we were unable to comprehend; in our innocent desires we wished to be all eye, in order to enjoy the rich colours of Aurora; all smell, to inhale the perfume of our flowers; all ear, to listen to the warbling of our birds; all gratitude, to acknowledge these blessings. Now at the source of beauty, whence flows all that is delightful on the earth, my soul immediately tastes, hears, touches, what it could then perceive only through feeble organs. Ah! what language is capable of describing these regions of an eternal morning which I inhabit for ever. Every thing that omnipotence and celestial goodness could create in order to administer consolation to an unfortunate being, all the harmony which the friendship of an infinite number of beings partaking of the same felicity mingles in our common transports I now experience without alloy; support thyself then in thy state of probation that thou mayest increase the happiness of thy Virginia by a love which knows no bounds, and by a marriage the torches of which can never be extinguished: there I will calm thy sorrows, there I will wipe away thy tears. Oh! my friend! my young husband! elevate thy soul toward infinity, in order to support the miseries of a moment."

My own emotion entirely stifled my voice: as for Paul, regarding me stedfastly, he exclaimed, "She is no more! she is no more!" A long languid oppression succeeded these mournful words; then, returning to himself, he said, "Since death is a blessing, and Virginia is happy, I will die also that I may again be united to her." Thus the consolation which I endeavoured to administer only served to aggravate his despair; I was like a person who wishes to save his friend when sinking to the bottom of a river, without his making any effort to swim; sorrow had entirely overwhelmed him. Alas! the misfortunes of our early age prepare man for entering into life, and Paul had never experienced them.

I conducted him back to his habitation, and I there

found his mother and Madame de la Tour in a very languishing state, which had greatly increased since I left them; Margaret was the most broken down; lively characters, over whom slight troubles slide easily away, are the least able to withstand heavy calamities; she said to me: "Oh, my kind neighbour! I dreamt to-night that I saw Virginia, clothed in white, in the midst of bowers and delicious gardens; she said to me, 'I enjoy a felicity greatly to be envied;' then she approached Paul with a joyful air, and carried him away with her. As I was endeavouring to retain my son, I felt as if I was quitting the earth myself, and that I followed him with a pleasure inexpressible; upon that I wished to bid farewell to my friend but I perceived her coming after us, accompanied by Mary and Domingo; but what is still more singular, Madame de la Tour has had this very night a dream attended with exactly similar circumstances." I replied, "My friend, I believe that nothing happens in the world without the permission of God; dreams sometimes announce truth."

Madame de la Tour related to me a dream entirely resembling this, which she had that same night: I never observed that these two ladies were in the least inclined to superstition; I was therefore struck with the coincidence of their dreams, and I had not the least doubt in my own mind that they would soon be realized. The opinion that truth is sometimes conveyed to us in sleep is universally propagated over all the nations of the earth; the greatest men of antiquity have adopted it, among others, Alexander, Cæsar, the Scipios, the two Catos, and Brutus, who were none of them men of weak minds. The Old and New Testament have furnished us with many instances of dreams which were verified; for my own part, I have no occasion for any higher proof on the subject than my own experience, and I have found, oftener than once, that dreams are sometimes warnings, which give us information very interesting to ourselves, but if any person shall pretend to attack or defend by argument things which transcend the powers of

human understanding he undertakes an impossibility; however, if the reason of man is only an image of that of the Almighty, since man is capable of conveying his thoughts to the extremities of the world by secret and concealed means, why should not that intelligence which governs the world employ similar methods of accomplishing the same purpose? One friend consoles another by a letter, which travels through a multitude of kingdoms, which circulates amidst the hatred of nations and communicates joy and hope to one single individual; why then may not the sovereign protector of innocence come, by some secret means, to the relief of a virtuous soul which reposes confidence in him alone? Has he occasion to employ any exterior sign to execute his will, he who acts continually in all his works by an internal impulse? Wherefore doubt of the intimations given in dreams?—life, filled with so many vain and transitory projects, what is it but a dream! However that may be, those of my unfortunate friends were soon realized: Paul died two months after his beloved Virginia, whose name he incessantly repeated. Margaret expired eight days after her son, with a joy which it is bestowed only on virtue to taste; she took the most tender farewell of Madame de la Tour, "in the hope" said she "of a sweet and eternal re-union." "Death is the greatest of blessings," added she, "it is highly desirable; if life be a punishment we ought to wish for its termination, if it be a state of probation we ought to wish it shortened,"

Government took care of Domingo and Mary, who were no longer in a condition for service, and who did not long survive their mistress; as for poor Fidèle, he drooped to death nearly about the same time with his master.

I conducted Madame de la Tour to my habitation; she supported herself in the midst of losses so terrible with a greatness of soul altogether incredible; she administered consolation to Paul and Margaret to the very last moment, as if she had no distress but theirs to support; when they were no more, she spake to me of them every day, as if

they had been beloved friends still in the neighbourhood, she survived them however only a month.

With regard to her aunt, far from reproaching her with these misfortunes, she prayed God to forgive her, and to appease the dreadful horrors of mind with which we heard she had been seized immediately after she had dismissed Virginia with so much barbarity. This unnatural relation soon met with the punishment due to her cruelty; I heard, by the successive arrival of several vessels, that she was tormented by the vapours, which rendered life and death equally insupportable: sometimes she reproached herself with the premature death of her grand-niece and that of her mother which soon followed it; at other times she applauded herself for having discarded two unhappy wretches who had disgraced her family by the meanness of their inclinations; frequently flying into a passion at sight of the great number of miserable people with which Paris is filled, she exclaimed "Why do they not send these idle wretches to perish in our colonies?" She added, that the ideas of virtue, of humanity, and of religion, adopted by all nations, were nothing but the political inventions of their princes; then suddenly plunging into the opposite extreme, she abandoned herself to superstitious terrors, which filled her with mortal apprehensions. She ran about, carrying with her vast sums, which she bestowed on the rich monks who were her ghostly directors, and entreated them to appease the Deity by the sacrifice of her fortune, as if that wealth which she had denied to the miserable could be acceptable to the father of mankind! Her imagination was frequently haunted by deluges of fire, burning mountains, or hideous spectres wandering before her and calling her by name, with horrid screams. She threw herself at the feet of her directors, and formed in her own mind the tortures and punishments which were preparing for her, for heaven, just heaven, sends fearful visions to harrow up the souls of the unmerciful. Thus she passed several years, by turns an atheist and a devotee, equally in horror of life and death,

but what terminated an existence so deplorable was the very thing to which she had sacrificed the sentiments of nature; she had the mortification to reflect that her riches would, after her death, descend to relations whom she hated; in order to prevent this she endeavoured to alienate the greatest part of her fortune, but they, availing themselves of the frequent paroxysms of spleen to which she was subject, had her shut up as a lunatic, and her estates were put in trust for her heirs; thus her very riches put the finishing stroke to her destruction, and as they had hardened the heart of her who possessed them, so they, in like manner, extinguished natural affection in the breasts of those who coveted them: she accordingly died, and what filled up the measure of her woe, with so much use of her reason left as to know that she had been plundered and despised by those very persons whose opinion had directed her all her life long.

By the side of Virginia, and at the foot of the same bamboos, her friend Paul was laid; around them their tender mothers and their faithful servants;—no marble raises itself over their humble graves, no engraved inscriptions recording their virtues, but their memory will never be effaced from the hearts of those whom they had laid under obligations to them. Their shades have no need of that lustre which they shunned all their life-time, but if they still interest themselves in what is passing on the earth, they doubtless take delight in wandering under the straw-covered roofs, where industrious virtue resides, in consoling poverty discontented with its lot, in encouraging in youthful lovers a lasting flame, a relish for the blessings of nature, a love of labour, and a dread of riches.

The voice of the people, which is silent respecting the monuments reared to the glory of kings, has bestowed on several parts of this island names which still eternalize the loss of Virginia: you may see, near the Isle of Amber, in the middle of the shelves, a place called "The Saint Gerard's Pass," from the name of the vessel which perished there in returning from Europe. The extremity of that

long point of land which you see about three leagues from hence, half covered with the waves of the sea, which the Saint Gerard could not double the evening of the hurricane, in order to make the harbour, is named "Cape Misfortune;" there, just before you, at the bottom of this valley, is "Tomb Bay," where the body of Virginia was found buried in the sand, as if the sea had intended to bear her back to her family, and to render the last duties to her modesty upon the same shores which she had honoured with her innocence.

Young people so tenderly united! Unfortunate mothers! Dearly beloved family! These woods which gave you shade, these fountains which flowed for you, those rocks upon which you reposed together, still lament your loss. No one after you has dared to cultivate this desolate spot, nor rear again these humble cottages; your goats have become wild, your orchards are destroyed, your birds have flown away; nothing is now to be heard but the cries of the hawk flying around the top of this bason of rocks. For my part, since I behold you no longer, I am like a friend stripped of his friends, like a father who has lost his children, like a traveller wandering through the earth, where I remain in gloomy solitude."

As he uttered these words, the good old man walked away, melting into tears, and mine had flowed more than once during this melancholy relation.

INDIAN COTTAGE.

INTRODUCTION.

THE following short Indian tale contain more truths than many histories. I originally intended it to form part of a Narrative of a voyage to the Isle of France, published in 1773. As I there treat of the Indians in that island, I was desirous of subjoining a picture of their manners in their native land, composed from very interesting notes which I had procured. I therefore found an episode which I connected with an historical anecdote by which it is introduced. The subject is taken from a company of English literati, sent, thirty years ago, to different parts of the world, to collect information relative to various scientific subjects. I give an accouut of one of them who went to India, to contribute towards the promotion of truth; but as this episode was rather too long for my work, I thought fit to publish it separately.

I here protest that I had no intention of reflecting on academies, though I have great reason to complain of them, not on my own individual account, but for the sake of the interests of truth, which they frequently persecute, when it is contrary to their system.* I am besides, under too

* Science, that republic of human intellects has its aristocracies; these are academies. The conduct of one of their principal members, relative to my Theory of Tides, will enable the reader to form some opinion on this subject.

He first took every opportunity of decrying it in private circles; he prevented the journals, over which the academies possessed an influence, that is, those which had the most extensive circulation, from taking notice of it, and I have been told that he even amused himself in his private parties, with turning into ridicule my christian

great obligations to several English literati, who, without knowing me, and instigated only by the love of the sciences,

names prefixed to [illegible] secrets of Nature, because I had not the honor to annex, like him, to my family name, a long list of academical titles. As, under the former government, his name was in every periodical work, and his person in all the antichambers of the great, it was easy for him to act as he pleased towards a recluse, engaged only in the study of Nature: but conceiving, since the revolution, that all his interest might be of no avail, and finding that my works gradually gained estimation, in spite of all the obstacles which he threw in their way, he altered his conduct towards me. He came last summer to see me in the country, where I spent a few days. Previous to this he circulated a report in the neighborhood, that I was one of his best and oldest friends. The truth is, I had never spoken to him in my life, nor do I ever remember to have seen him before, notwithstanding his celebrity. He came to the house where I was, and we had a private conversation, of which I shall introduce only such part as relates to my Theory of Tides, the secret object of his visit.

After some preliminary compliments he said to me: "It is a pity, Sir, that you asserted in your studies of Nature, that the melting of the polar ices is the cause of the tides. The opinion is not tenable, and is contrary to that of all the academies in Europe."—"Sir," said I, "you ought to have refuted it."—"How is it possible to refute it when you have adduced no proofs in support of your Theory?—"There are twice as many as in that of the astronomers: I could make several quarto volumes were I only to collect those that are to be found in the narratives of voyages. Imperfect as it is, my theory has obtained some approbation."—"Oh! the opinions of the writers of certain journals, who know nothing of the matter, are no. worthy of notice."—I imagined that he alluded to the extracts from the English papers, inserted in the Moniteur. "Had there been in my theory," said I, "no other than the geometrical objection which I have made against the academicians, who have suffered themselves to be misled by Newton, in concluding, from the magnitude of the degrees towards the poles, that the earth was flattened in that part, you ought to have answered it."—"What do you mean by a degree?" he rejoined with warmth.—"What all geometricians understand by the term, the 360th part of a circle."—"You have fallen into the same error as M. de la Hire did 130 years ago. A degree is not measured by the arc of a circle but by its perpendicular." At the same time to give me a demonstration of this, he took a white crayon out of his pocket, and began to draw on the door, a circle, two radii, a chord, sinuses, &c. I interrupted him, saying: "You are flying from the question; it is not the measure of the perpendicular of the degree of Torneo that is given by the academicians, but that of the portion of the celestial curve comprized between two radii which measure a celestial degree of the meridian. They found that, at the polar circle, this portion of the circumference of the earth, which, like me, they denominate a degree, contains 57,428 fathoms, which exceeds by 674 fathoms the degree measured in Peru, near the equator, the arc of which contains no more than 56,748 fathoms. Hence they concluded, that the degrees, or portions of the circumference of the earth, corresponding to the degrees of the celestial meridian, gradually encreased towards the poles, and that consequently the

have honored my Studies of Nature with the most glorious suffrages, which they have not been afraid to publish.

circumference of the earth was flattened there. Now, if you can bring this curve, constructed on the diameter of the sphere, and formed of degrees larger than those of the sphere, into the sphere itself, I am wrong."

Being at a loss for a reply, he changed the conversation.

"You have advanced," said he, "that the tides are of twelve hours continuation in the South Sea, but that is not the fact."—"I have not said so," replied I, "though I am disposed to believe that such is the case with regard to the whole hemisphere: but I have not had sufficient proofs to affirm it. I have mentioned only five or six places of the South Sea, where the tides are of twelve hours. I have since found several others of equal duration in the Indian Seas, and even in our hemisphere, among others those of Tonquin, mentioned by Dampier. I likewise shewed him testimonies which I had extracted from Carteret, Byron, Cooke and Clerke, relative to the tides of twelve hours in the South Sea. After he had read them, he asked: "Do you understand English?" This put me in mind of the question of the *Medecin malgré lui;* Do you understand Latin? I replied in the negative, and thought he was going to speak to me in English. "You ought never to quote from translations," said he. "I have all these voyages in the original, and in no part of them is mention made of tides of twelve hours. I am perfectly sure of it, for I have written a treatise on the tides of the whole world, without having quoted translations;" but this point was not worth answering. "What!" said I, "can you suppose translators so intelligent and accurate as those I have mentioned, could have made mistakes on points of such importance to navigation and astronomy, and that they could have affirmed that the tides were of twelve hours' continuance in various parts of the South Sea, when the voyagers whom they translated positively declared that they were of no more than six? That is impossible."

I then put an end to the conversation by saying: "Attack my theory publicly, and I will answer you." He replied that he had no such intention, but that he was come to set me right. Such was the substance of our conversation, and it is for the public to judge on whose side were good sense and candor.

I have refuted the error of the academicians with proofs simple and intelligible to every capacity: why have they not employed similar proofs with respect to me, if I am myself in error.

The question relates entirely to an elementary truth of geometry. It is certain that the semi circumference of the earth contains 180 degrees: and that its degrees being for the most part larger than the 180 degrees of the half sphere constructed on the same diameter, the former cannot be contained in the latter.

An officer of engineers wrote to me two years ago, for Mézières, that by this simple argument he had obliged a professor of mathematics, not to hold his tongue (for what professor was ever produced to that?) but to give an absurd answer. "I told him," writes he, "that the terrestrial curve being larger than the spherical arc, it could not be comprehended in the latter, unless it be supposed to recede instead of projecting, and that the poles of the earth are scooped out in form of a funnel. Would you believe," adds he "that he answered: I would rather suppose that the poles of the

The character which I have given of their colleagues is an unequivocal proof of my esteem for them. Most assuredly I cannot but consider their endeavours to import knowledge from foreign countries as deserving of the utmost gratitude of their nation, just in the same manner as I look upon their exportation of it to savage regions by the voyages of Cook and Banks, as worthy of the gratitude of the whole human race. The first has since been imitated by Denmark, and the second by France, but by both very unsuccessfully, for out of twelve Danish men of science

earth are scooped out in the form of a funnel, than believe that Newton is wrong."

Several Newtonians are disposed to adopt my theory of the tides by the effusion of the polar ices, this is already a great point gained; but they are desirous that I should admit the flattening of the poles, with the elevation of the seas under the equator, by the centrifugal power; and this is contrary to experience. I could write volumes in favour of my theory; but how is it possible to destroy an error consecrated by the name of Newton, and professed by all the geometricians of Europe? How can I contend singly against a coalition of academies, who shut their eyes to my evidence, and close their journals against my proofs! Notwithstanding their indifference, I venture to predict, that this truth which they reject will one day become the basis of the study of Nature. O men of my age! nothing but tales are capable of exciting your interest!

I was mistaken in accusing the astronomers of inconsistency, as I have candidly avowed in a note to the introduction of my first volume. I was not aware that they supposed the degrees of the meridian of the earth to be, for the most part, smaller than those of the sphere, especially near the equator. I cannot admit their theory, and it will not be difficult to refute it, at some future time, by facts geographical and physical.

I have many other objections to make against it. If the centrifugal power raises the sea under the equator five leagues and a half higher than the poles, it must give a still greater elevation to the atmosphere, which is a fluid much more moveable than the ocean. The barometer, charged with this vast volume of air, ought, in consequence to rise considerably under the line, but this does not take place. It is impossible to reply to these objections, but by sophisms.

On the other hand, my theory of the alternate fusion of the polar ices explains an infinite number of problems inexplicable by the system of philosophers. For example, why is the winter milder, and the summer cooler on the coasts of the Atlantic than in the corresponding parts of continents? It is because in winter the current of the Atlantic Ocean proceeds from the torrid zone, and in summer it descends from the frigid zone. The same theory explains the reason why the islands of Asia are hotter than those of America, situated under the same latitudes, and likewise many other physical effects, which I cannot here enumerate.

who went abroad, only one returned to his native country and no intelligence has ever been received of the two French ships of war employed in this mission of humanity, and commanded by the unfortunate La Perouse. It is not therefore science itself that I censure; but I wished to shew that learned bodies, by their ambition, their jealousy, and their prejudices, frequently serve only to throw obstacles in its way.

I proposed to myself a still more useful object, namely, to alleviate the miseries which afflict humanity in the regions of India. My motto is to succour the unhappy, and this sentiment I extend to all mankind. If philosophy formerly came from India to Europe, why should it not now return from civilized Europe to the Indians, who have become barbarous in their turn? A society of English literati has been formed at Calcutta, which will, perhaps, one day destroy the prejudices of India, and thus make amends for the evils introduced by the wars and the commerce of Europeans. As for me, who possess no kind of influence, in order to give a more agreeable form and more graces to my arguments, I have endeavored to clothe them in the dress of a tale. It is by means of tales that men are every where rendered attentive to truth.

It has been observed, with more wit than reason, that fable was born in the despotic regions of the east, and that truth was there veiled, in order that she might be able to approach tyrants. But let me ask; would not a sultan be more highly offended to see himself depicted under the emblematic figure of an owl or leopard, than from Nature?—and, would not indirect truths be at least as galling to him as direct ones? Thomas Roe, ambassador from England to Selim Shah, the Mogul emperor, relates that this despotic prince having caused the boxes sent from England to be opened before him, that he might take the presents intended for him, was much surprized to find a picture representing a Satyr, whom Venus was leading by the nose. He imagined that this picture was

painted in derision of the people of Asia, that they were represented by the dusky and horned satyr, as they were of the same complexion, and that Venus leading the Satyr by the nose, was allegorical of the great influence which the women of that country possess over the men.

Roe, to whom this picture was addressed, had the utmost difficulty to erase this impression from the mind of the Mogul, and to give him an idea of our fables. He takes this opportunity of earnestly recommending to the directors of the English East-India Company, not to send in future any allegorical pictures to India, because the princes of that country are exceedingly suspicious. Such, in fact, is the character of all despots. I think, therefore, that fables were not invented for them, unless for the purposes of flattery.

A love of fables is generally diffused all over the world, but it is much more prevalent in free than in despotic countries. The savage nations ground their traditions on fables; they were never more common in any country than in Greece, where all the objects of Nature, of politics, and of religion, were merely the results of certain metamorphoses. There were few illustrious families but what had some animal in the number of their ancestors, or reckoned among their cousins, bulls, swans, nightingales, doves, crows, and magpies. It may be observed, that the English, in their literature, manifest a particular fondness for allegory, though the truth may be told among them with the utmost freedom. The Asiatics were in the same condition at the time of Esop and Lokman; but at the present day we find no fabulists among them, though their country is filled with sultans.

'Tis those nations that have approached the nearest to Nature, and consequently, such as are the most free, that display the strongest disposition to adorn truth with fables: this proceeds from the love of truth itself, which is the sentiment of the laws of Nature. Truth is the light of the soul, as physical light is the truth of bodies. Both together

impart the knowledge of what exists; the latter enables us to distinguish objects, the former manifests their adaptations; and as, in principle, all light derives its origin from the sun, so all truth emanates from God, of whom that luminary is the most admirable image. Few men can bear the pure light of the sun. 'Tis on account of the weakness of our eyes that Nature has given us eye-lids, for the purpose of covering them to a suitable degree; that she has planted the earth with forests, whose verdant foliage affords us soft and transparent shades, and that she veils the heavens with vapors and with clouds, to weaken the too intense rays of the orb of day. In like manner, few are capable of comprehending truths purely metaphysical. 'Tis on account of the weakness of our understanding that Nature has given us ignorance, to serve as an eye-lid to the mind; by means of this the soul opens by degrees to truth, admits only so much as she can bear, and surrounds herself with fables, which are like groves, in whose shade she may contemplate it, and when she is desirous of soaring to the Deity himself, she veils him with allegories and mysteries that she may be able to endure his replendence.

We should not see the light of the sun, were not its rays reflected by bodies, or at least by the clouds. It escapes our view beyond our own atmosphere, and dazzles us at its source. The same is the case with truth: we should not seize it, were it not to fix itself upon perceptible events, or at least on metaphors and comparisons, by which it is reflected. It requires a body to transmit it to us. Our understanding has no hold upon truths purely metaphysical; it is dazzled by those that emanate from the Deity, and it cannot seize such as do not repose upon his works. For this last reason the language of civilized nations depicts nothing, because it is replete with vague and abstract ideas; and that of nations in a state of simplicity and of nature is highly expressive because it is full of similes and metaphors. The first are habituated to

conceal their sentiments; the second to extend them. But as very often the clouds, dispersed in a thousand fantastic forms, decompose the rays of the sun into much richer and more varied tints than those which color the regular works of nature; so fables reflect the truth to a greater extent than real events; they transport it into every kingdom; they appropriate it to animals, to trees, to the elements, and produce from it a thousand reflexions. In like manner, the rays of the sun play, without being extinguished, in the depth of waters, in which they reflect objects on the earth and in the heavens, and redouble their beauties by means of consonances.

Ignorance, therefore, is as necessary to truth, as shade to light, since the harmonies of our understanding are formed from the first, as those of our sight are composed with the second.

Moralists, as I have already observed in my Studies, have almost always confounded ignorance with error Ignorance, considered individually and distinctly from truth, with which it has such pleasing harmonies, is the repose of the understanding; it causes us to forget past sufferings, disguises present sorrows, and conceals future misfortunes; in a word, it is a blessing, because we receive it from Nature. Error, on the contrary, is the work of man; it is invariably an evil: it is a false light, which shines to mislead us. I cannot better compare it than to the flames of a conflagration, which consume the habitation which it illumines. It is remarkable, that not a single moral or physical evil exists, but what has an error for its principle. Tyranny, slavery, war, are founded on political, and even on sacred errors; for the tyrants who circulated them in order to establish their power, have always derived them from the Deity, or from some virtue, that they might command the respect of mankind.

It is, however, extremely easy to distinguish error from truth. Truth is a natural light which shines of itself all over the earth, because it emanates from God. Error is

an artificial light, which requires to be continually fed and can never become universal, because it is the work of men alone. Truth is useful to all mankind; error is profitable only to a few, and prejudicial to all, because private interest is hostile to the general interest when it separates itself from the latter.

Great care must be taken not to confound fable with error. Fable is the veil of truth, and error is its shadow. It was to dissipate this that fable was invented; yet, however innocent it may be in its principle, it becomes dangerous when it assumes the chief character of error, that is, when it is converted to the private advantage of certain individuals. For example, it was of little consequence that the moon, under the name of Diana, was made a virgin goddess, who presided over the chace. This allegory signified that the light of the moon is favorable for huntsmen to lay snares for game, and that the exercise of hunting destroys the passion of love. There was no great harm in dedicating to her the pine in the forests; * this tree became a hunting rendezvous. Nor was there any great

* In like manner the oak was dedicated to Jupiter, the olive to Minerva, the pine to Pan, the laurel to Apollo, the myrtle to Venus, &c. Trees were likewise consecrated to demi-gods and heroes: the poplar was the tree of Hercules. Finally, nymphs, shepherds and shepherdesses had a share in the rest of the vegetable kingdom; the jealous Clythia gave her color and attitude to the sun-flower, and Adonis stained the flower that bears his name with his blood. Plants and trees in particular, were the first monuments of men. I have therefore made two cocoa-trees serve in the Isle of France, as monuments of the birth of Paul and Virginia, without borrowing that idea from a celebrated modern poet, who has complained without occasion; he is rich enough in his own ideas to permit others to borrow from him; but if that to which I allude did not exist in Nature, I should have found it, like him, in his models, the Ancients. It is very common among botanists who mark with new plants the epochs of friendship and gratitude, by giving them the names of their patrons and their friends. Finally, astronomers have extended this sentiment to the stars and mariners to the lands, rivers, and islands they discover, to which they assign the names of saints, of kings, of captains, of events, of conquests, of massacres, the remembrance of which they are desirous to perpetuate. When most of the objects on earth, and in the heavens, serve as monuments of the passions, and frequently of the fury of men, may not I be permitted to consecrate two trees in a fortunate innocence and maternal affection?

harm in a huntsman's suspending from it the head of a wolf, in order to obtain the protection of Diana. But when he hung up the entire skin, there were people who resolved to take advantage of the circumstance. They erected a chapel to the goddess, where not only the skins but whole sheep were offered, to preserve the rest of the flock from those ravenous animals. These offerings were multiplied on account of some prodigious boar which had overturned the vines, and had brought about his heels all the dogs and youths of the adjacent country. The huntsmen drew pilgrims, and the pilgrims brought merchants to the spot. A village was soon formed around the chapel, to which credulous people soon ascribed oracles. As victories were likewise predicted, kings sent presents thither; the chapel was then transformed into a temple, and the village into a city, which had its priests, its magistrates, and its territories. Imposts were soon laid upon the people for the purpose of erecting magnificent temples, like that of Ephesus; and as fear has more power over the human mind than confidence, to render the worship of Diana terrific, human victims were sacrificed to her in the regions of Taurus. Thus an allegory invented for the good of the people, contributed to their wretchedness, because it turned to the profit of a particular city or temple.

Truth itself, is prejudicial to men, when it becomes the patrimony of one class. There is certainly a great difference between the toleration of the gospel and the intolerance of the inquisition; between the precept which Christ gave to his apostles, to shake the dust from their feet at the houses, whose owners refused to admit them, and his indignation when they besought him to call down fire from heaven, and the destruction of the ancient Indians of America, and the faggots of an auto-da-fé.

At the gallery of the Tuileries, to the right, on entering the garden, is an Ionic column, which the celebrated Blondel, professor of architecture showed as a model to his pupils, observing that all the succeeding ones gradually

decrease in beauty. The first, said he, is the work of a famous sculptor, and the others were successively made by artists, each deviating more than his predecessor from its forms and proportions. He who made the second has produced a tolerable imitation of the first, but the third is a mere copy of the second; thus proceeding from copy to copy, the last is far inferior to the original. I have often compared the gospel to this beautiful column of the Tuileries, and the works of ancient commentators to those of the rest of the gallery. But if the series were continued with the modern commentators up to the present time, what shapeless columns would their volumes exhibit, and who durst place any reliance upon them amid the tempests of life!

Since truth is a ray of celestial light, it will ever continue to shine for all men, provided their windows be not taxed; but how many societies founded for the purpose of propagating it, because it turns to their advantage, substitute in its stead the light of their tapers and of their lanterns. They soon find means, if they are powerful, to persecute those who discover it; and if they are not, they oppose to them an inert force, which prevents its circulation: for this reason its admirers often withdraw from men and cities. Such is the truth which it was my intention to prove in this little work; happy if I can contribute, in my native land, to the felicity of one single unfortunate individual, by painting the happiness of a Paria in his cottage in India.

PREAMBLE

TO THE

INDIAN COTTAGE.

This little work on being ushered into the world was distinguished by three species of success.

In the first place, it was no sooner published than several pirated editions appeared in the Palais Royal. This was undoubtedly doing me great honor, but it was making me pay very dearly, and deceiving the public by presenting them with faulty impressions.

The second kind of success of the Indian Cottage was, that it procured me the praises of the most distinguished journalists, and letters replete with interest from many of my readers. Nothing is more agreeable than a new friendship. All first-fruits are pleasing, and particularly those of the heart. Whatever sensibility I may possess, it is impossible for me to cultivate them all. Among those who do me the honor to court my correspondence, there are some, and they are not all ladies, who, for fear, as they say, of intruding upon me, write short letters, which require long answers: the contrary would suit me much better. It is undoubtedly one of my highest pleasures to behold the sentiments that emanated from the soul returning thither with those of my friends, whom they have procured me: but it is one of my greatest pains that I er-

unable to cultivate such interesting connections. I am a lonely being; my health is bad, and I can only write a few hours in the morning. I have considerable quantities of materials to arrange, which I have neither strength nor time to put in order; nay, my circumstances are an obstacle to an extensive correspondence; for many letters come to me, from a great distance, with the postage unpaid. I hope these considerations, which impose upon me in so many ways, the necessity of brevity or silence, will plead my excuse with most of my readers, whose approbation I acknowledge the most pleasing recompense of my labors.

The third kind of success obtained by the Indian Cottage is, that it excited envy. Certain journalists attacked me in their publications. An abbé, disguised under an English name, asserted, in his journal, that I designed to turn our priests into ridicule under the appellation of Bramins. He said, it is true, to one of his subscribers, a lady who reproached him for his conduct, that, had he known she had been a friend of mine, he had not published the letter to which I allude: so true is it, that interest and not truth is the guide of a mercenary writer.

An academician bitterly complained of a note to my introduction, in which I treat the hypothesis of the flattening of the poles as an error. Another journalist of the same class, having no objection to make, either on the score of religion or of the poles, felt his natural jealousy roused by successes, for which he had not paved the way. Having no fault to find with my Indian Cottage, he has attacked my Rudiments of Education with great acrimony. Accustomed to repeat only the ideas of others, he will not permit me to have any of my own; he censures me for interdicting ambition in children, whom he is for educating, like himself, with academic corals; he thinks it wrong that I should forbid them to strive to be the first; that I should substitute in their youthful minds the love of humanity, instead of the love of themselves, the general interest instead of private interest, and that I should teach them

o live peaceably in the age of innocence, that they may be disposed to concord in that of the passions. If I wanted any striking proof of the bad effects of the old system of education, in rendering men jealous, and unjust, with great pretensions, and little talents, I should certainly produce no other example than himself.

There are creatures that are ill-natured without necessity. I have seen magpies turning round the cages of pigeons, merely for the purpose of pecking out their eyes. These babbling and mischievous birds snatch away every thing that glistens, to conceal it in their holes. I was doubtful whether I should not introduce the detractors of my works into the Preamble to my Indian Cottage, as magpies are nailed on the door of a pigeon house; but I recollect this precept of Pythagoras: Charge not thy children with thy vengeance. Ye thoughts, offspring of solitude and of Nature, ye are not enclosed in cages, nor can envy tear out your eyes! Free as your mother, ye will one day traverse the different regions of the globe, alighting near tender hearts, and bring them, like doves, love and peace!

In defending the truth against my enemies, I shall therefore suppress their names, though they have mentioned mine in their journals. These trumpets of different parties have set up for the dispensers of praise or censure; but they are formidable only to minds enervated by our ambitious education. We never give a man the power of disgracing, except when we give him that of honoring us. Every flatterer is a calumniator. For my part, I await my sentence from the public opinion alone: it is for this to do justice to those petty tribunals set up by their own authority to give it laws. It has destroyed the aristocracies which had monopolized honor and justice, and tyrannized over the conscience of the people; it is for this to reform those that have usurped the dominion over the arts, the sciences, literature, and the most noble faculties of human reason, and all, very often, for the profit of an

adventurer, who traffics with their politics, with their philosophy, and with their theology.

Setting aside then every thing that relates personally to myself, I shall merely answer some objections made against moral truths, that are the first principles of the love we owe to God and to men. With regard to the physical truths, on which depend, in my opinion, the rudiments of the knowledge of the globe, I mean the prolongation of the poles, and the circulation of its seas, which alternately flow from them, these I reserve for another work, in which I hope, by the blessing of God, after refuting the contrary systems, to add new proofs to my theory, and to arrange them, with the former, in such order as will leave nothing to be desired.

In the mean time I will answer those who accuse me of having a design to satirize our priests under the name of Bramins, that, had this been my intention, I should have sent the English doctor on his travels, not among the Bramins, but to the Dalai Lama, the living image of the God Fo, whose clergy have an hierarchy, ceremonies, and tenets, so nearly resembling those of the Romish church, that the Jesuit missionaries Grebner, Desideri, Gerbillon, and Father Horace de la Penna, a Capuchin who visited their country, and have given us descriptions of it, are of opinion that the christian religion was formerly preached there. On the subject of these conformities, the reader may consult the 7th volume of the General History of the Abbé Prevost; but, according to the observation of that compiler himself, the religious customs of the Lama priests, appear of much higher antiquity, since Fo, or La, the founder of their religion, was born 1026 years before Christ. I could not therefore intend to delineate in the Bramins any thing but the Bramins, and this must be obvious to all those who have been in India, or who have read descriptions of that country.

Nay more—so far from having intended to attack the christian religion, I have represented a man imbued with

its spirit, in the honest inhabitant of an Indian Cottage The Paria is the man of the Gospel: he loves all mankind he does good even to his enemies, and he confides in God alone. He has, it is true, no faith in books; in this he is very excusable, since he cannot read. But it was not with books that Christ, who never wrote any, called his disciples, who were nearly as illiterate as the Paria; it was by his benevolence, his charity, and the sublimity of his morality, the first laws of which are not impressed on books, but on the human heart, and the light of which illumines, according to St. John, every man that cometh into the world. Jesus never wrote any thing, excepting on one occasion, when the doctors of the law accused the woman taken in adultery. It has been plausibly supposed that he was recording their own sins; but it is worthy of remark that he wrote them only upon sand. I have, therefore, endeavored by the example of the Paria, and conformably to the doctrine of Christ, to console such persons as are afflicted by the hand of God, and by men, by shewing them that the Almighty has placed in their hearts a source of eternal truths, whence each of them may derive what is adapted to his wants, and which the wicked are unable to disturb. The Paria, being asked by the English doctor whether the truth ought to be proclaimed to men, replies, like Jesus, that it should not be told to the wicked; and by a simile, resembling that of the scripture, he compares truth to a precious stone, and the wicked to a crocodile. "Neither cast ye your pearls before swine," said Jesus, "lest they trample them under their feet, and turn again and rend you." Matt. vii. 6. Finally, it is to such men as the Paria, to the poor in spirit, to the meek, to the afflicted, to the victims of injustice, to the charitable, to the pure, to the peaceful, to the persecuted, that Christ promised the eight beatitudes of the earth and of heaven, even though they might not be able to read, while he threatens with the eight maledictions those who, assuming the title of doctor, which he forbids his disciples to

take, shut up the kingdom of heaven against men, devour widows' houses, and, for a pretence, make long prayers, compass sea and land to make one proselyte, absolve people from oaths, sacrifice justice, mercy, and confidence in God, to mere regulations of discipline, make clean only the outside of the cup, are like unto whited sepulchres, and ostentatiously erect religious monuments, for the purpose of obtaining consideration among men. Matt. v. and xxiii.

I shall not dissemble that in my attempts to succour the wretched, according to the motto of my work, I have endeavored to overthrow their tyrants, of whatever kind they might be. The most generally diffused of their maxims is, that children inherit the virtues and the vices of their parents. Thus ambition has not only bound the present in its chains, but likewise the past and the future. Every species of tyranny is founded on an error that is often consecrated by religion; and to the imaginary influence of birth are attached most of the evils that afflict mankind. Upon this basis are founded, on the one hand, the hatred and contempt which overwhelm a multitude of useful men, and even whole nations; the slavery of the Negroes, the persecution of the Jews, the ancient feudal servitude of our peasantry, the oppression of the Guebres among the Turks, the infamy of the Parias among the Indians; and on the other, the prerogatives and honors conferred on the noble and religious casts of Asia and of Europe, such as the Naires, the Bramins, &c. This opinion, when combined with religion, involves mankind in irrevocable misery; for it excites intolerable pride in the one, persuading them that they are of divine origin, and endued with a celestial power, and it plunges the others into despair, as it deprives them of the courage to raise their eyes towards an implacable Deity, whose victims they imagine themselves from one generation to another.

Had I been destitute of the arms of reason to combat an error so injurious to God and so fatal to men, I might have found abundance in the very books which evil-designing

doctors have made use of to establish it among us. At the time of the prophet Ezekiel, the Israelites, oppressed with the weight of their misery, accused God of injustice, alledging that he inflicted on them the punishment due to the sins of their fathers. "The fathers," said they, "have eaten sour grapes, and the children's teeth are set on edge." Ezekiel answers them in the name of God: "As I live, saith the Lord God, ye shall not have occasion any more to use this proverb in Israel. Behold, all souls are mine, as the soul of the father, so also the soul of the son is mine The son shall not bear the iniquity of the father, neither shall the father bear the iniquity of the son; the righteousness of the righteous shall be upon him, and the wickedness of the wicked shall be upon him. Ezekiel, xviii. 2, 3, 20. Nothing more explicit could be desired to prove the natural innocence of man. The same truth is likewise to be found in the gospel. Though the Jews were then highly depraved, Jesus considers their children as innocent. He said to his disciples, who repulsed them with harsh language: "Suffer little children, and forbid them not to come unto me: for of such is the kingdom of heaven." Matt. xix. 14. On another occasion he says: "Whoso shall receive one such little child in my name, receiveth me." He would certainly not have spoken in this manner of children, had they been defiled by the sins of their fathers.

I have made the Paria reason like the prophet Ezekiel, and act like a disciple of Christ. The Gospel is only the expression of the sublime laws of Nature. Had we not the authority of that sacred book, we have at least the authority of Nature herself. We daily behold children who differ essentially from their parents. If moral qualities were transmitted by birth, we should see invariable families of Socrateses, of Catos, of Neros, of Tiberiuses; or rather all men would be exactly alike, because they are all descended from one general father.

It is, however, on this opinion, so completely refuted by experience, that aristocracies ground their prerogatives

In our schools, which have flattered every species of tyranny, they are supported by subtle arguments. All men, it is there taught, were contained from father to son in the first man. Their birth is nothing more than their developement. The same observation applies to all organized beings. Each individual issues from its first germ in which it was enclosed with all its posterity. The first acorn comprised within itself all the oaks in the universe. As a visible proof they adduce the root of a tulip, which contains its flower completely formed, and if you do not perceive, say they, in the seeds of that flower, a second generation of tulips, the reason is, because the eye of man is incapable of pursuing its observations any farther. Our doctors, not satisfied, with confining an infinite quantity of matter within a very small space, distribute with the same facility a very small portion of matter over a space of boundless extent. If, say they, you dissolve a grain of carmine in a quart of water, the whole of it will assume a red color. If you pour it into a cask nearly filled with water, each drop of water in that cask will contain a portion of the carmine. If you empty the cask into a lake, each drop in the lake will comprise a portion of a red-tinged water of the cask. Finally, if you cause the lake to discharge itself into the sea, each drop in the sea will comprehend a portion of the carmined water of the lake. Thus a grain of carmine is diffused throughout the whole ocean. In this manner they pretend to prove the divisibility of matter in an infinite progression, descending from great to small, and ascending from small to great. I passed the flower of my youth in combating these chimæras in our schools of philosophy, as they are called. When I represented the incomprehensibility of these arguments, they raised objections against the insufficiency of my reason. They opposed to me the authority of geometry, in the instance of two lines, which are continually approaching the curve, without ever touching it. This was only an additional sophism. The misfortune is, that from this

progression *ad infinitum*, consequences are deduced prejudicial to the happiness of various classes, and what is still worse, of mankind in general.

I could have demonstrated the falsehood of this principle, from the injustice of its consequences, for every evil springs from some error, as every good emanates from some truth Thus God is the source of intelligence only because he is the source of bounty. But my object was not so much to guide my heart as to enlighten my understanding. It was therefore necessary to disencumber it of the subtilties of the schools. I thought that it could not be of a different quality from that of our doctors, who pretended to conceive and explain their mystery; and as I saw nothing but contradictions where they declared they perceived the clearest evidence, I concluded that either their reason or mine must be in error. To correct in myself this rule of our judgment, I applied it not to the laws written in books, those works of men, liable, like myself, to mistakes, but to the laws of Nature, that work of the Almighty, who never errs. It is the sense of his laws that constitute evidence, that *ne plus ultra* of human reason.

In the first place, it appeared certain that all progression, descending to infinity, must terminate at zero. I took, for an object of comparison, a ladder formed of two poles, inclining toward each other. It appeared evident, that these two poles, lengthened at the end where they approached each other, must necessarily meet, and that the steps between them must likewise continue gradually to diminish: so that at the point where the two poles met, the last step would be reduced to nothing. I suppose then, that these two poles represent the first male and the first female of every class of beings, and the steps the generations from the father and mother; it is obvious that these generations will progressively diminish, since the first comprehends the second, the second the third, and so forth. Thus the last generation inclosed in the father and mother, like the last step comprehended between the two

poles of the ladder, must, in a few degrees, be reduced to nothing.

This demonstration appeared much clearer when I had studied the laws of Nature herself. In these I plainly saw that had God inclosed all the generations of each being in the first germ, he had violated the laws he himself established for the procreation of successive generations and for rendering them productive in their turn. These laws are those of love, which exist for men, for animals, for vegetables, and perhaps for beings of another kingdom. Of this the example of the tulip root, which contains the flower completely formed, affords a proof. This enclosed flower is composed only of floral embryos, the petals of which require to be developed by the concurrence of the elements. Its antheræ, or male parts, must likewise acquire a fecundating power by means of the action of the sun, and the stigmata of the pistil, or female parts of the flowers must be fecundated by the seminal powder of the antheræ, in order that the seeds contained in the ovary may be capable of producing tulips. Thus the whole scale of this supposed infinite progression of tulips terminates at the first bulb. Besides, the seed of the tulip is not a bulb; for before it can arrive at that state, it must be put into the ground, and be covered by each moon with a new concentric coat, like bulbous plants and various other roots. If we take, for example, an acorn, and suppose that we may discover an oak comprized in it, we shall certainly not find in it the rudiments of its knotty roots, which are destined to pierce the bed of rocks, nor those of its trunk, the work of ages, to which each solar year adds a circle, as each lunar month adds a circle to the bulbous plants. It is farther impossible that this embryo-oak can actually produce acorns; for the generation of these acorns depends on the fecundation of their male and female flowers, which as yet do not exist, since they never appear on the tree till after a certain number of years, when it may be said to be grown up.

Thus this imaginary infinite succession of oaks, comprehended in the first acorn, terminates at the farthest, with the first embryo-oak. The same is the case with the successive generations of men. If we suppose that the first of men contained a human embryo, this embryo must have required the maternal womb in its passage to elementary life, and twelve or fourteen for its expansion, and the formation of the seminal particles, which are to produce a second generation. Anatomists have never discovered seminal particles in children that have died before the age of puberty: they cannot then exist in the first embryo, which requires the concurrence of the two sexes before it can receive elementary life, or its organs can be developed. Accordingly Nature could not have inclosed all the generations of each being in the first germ, since each generation can receive existence only from the combined action of a father and a mother, and cannot in its turn communicate life to the succeeding generation but by the same means. To say that all oak-trees were comprehended in the first acorn, and all the generations of the human race in the first embryo, is the same thing as to assert that all the ages of the world were contained in the first minute. A son, then is not actually contained in his father, any more than to-morrow is comprehended in to-day, or next year in the present year. Every child owes its existence to the coition of a male and of a female, as does each year to the combined motion of the sun and of the earth; and the child, like the year, is rendered capable of procreating only by a periodical series of days and of seasons, which the orb of light, the image of the Deity, successively produces.

Nevertheless, by maintaining that all men were comprehended in their ancestors, our schools misled the mind for ages. How many dangerous consequences have been deduced from this system of metaphysics to the misfortune of mankind! For, I repeat it, there is no error but what is productive of mischief, and no evil but what proceeds from error. Writers, moreover, have represented tribes, nay,

whole nations, as infamous or illustrious, vicious or virtuous, merely on account of their origin: others, and very often the same, have comprised the whole human race in one general proscription, regardless how they contradicted themselves by their exceptions. Nature, however, shewed them that, in the same families, there were good and wicked men, which could not have happened had all borne the same original impression, like pieces of metal struck with the same die: besides, had virtues and vices been transmitted, so would talents, arts and sciences. A scholar would have begotten scholars, in the same manner as it is supposed that a virtuous father produces a virtuous child, but experience proves that knowledge and error, as well as virtues and vices, are the fruits of education and of habit.

I believe that all men sprung from one progenitor, but that they were successively formed by the copulation of the sexes. The wonderful law by which they are supposed to be contained one in another, would, after all, be nothing more than a merely mechanical law; but that which produces them by the harmony of the loves, is a divine law.

It is an ever-living, ever-loving law, and worthy of the Author of the universe alone. He once created the genera, he still procreates the individuals: he is incessantly active; he causes the alternate intervention of the elementary harmonies, filial, vegetable, animal, fraternal, conjugal, maternal, tributive, national, and even those of the whole human race, to form a single man. From the physical harmonies he produces moral harmonies; from the elementary, the first sentiments of love and of hatred in children; from the filial, their gratitude and piety towards their parents; from the vegetable and animal, the intelligences of Nature and its author in boyhood; from the fraternal, the sentiment of friendship and equality in youth; from the conjugal, fidelity, constancy, generosity, and all the affections of lovers; from the paternal, economy, prudence, courage, and all the domestic virtues that adorn the age of

manhood; from the tributive, the love of glory, which springs from the desire of serving one's fellow-creatures; from the national, the love of country, which in advanced years extends its affections to every class; and from the harmonies of the human race, the philanthropy which embraces all nations, and which results from the experience and the wisdom of old age. All these physical and moral harmonies are subdivided into active and passive, into positive and negative; and from their combination results the admirable concert of the universe and of mankind

Will it now be said, that a man comprehends within himself all his posterity? By the mere harmony of the sexes, each generation is modified in such a manner, that, in general, the males favor the mother, and the females the father in their character and physiognomy. Thus nature perpetuates herself by an incessant round of variations. I have presented, in my Studies, a few links of this admirable chain of harmonies; but if God should, one day, grant me the leisure and the favor to trace, remote from cities, this circle of loves and of virtues, I shall shew that round these harmonic laws all the social laws ought to revolve, because they are those of Nature herself. I hope, at least to attach to them the laws of education; for education ought to be nothing more than the apprenticeship of human life.

We derive then the first germ of our bodies from our parents, and frequently our physical constitution, whether good or bad; but this is not the case with our moral constitution. Our souls are given to us innocent and pure, because they proceed from God, and are his alone, as says the prophet Ezekiel: it behoves us, with his aid, to keep them virtuous and just. For the purpose of expanding them, he traced a circle of loves and of virtues; if we have been thrust out of this track by the depravity of society, we shall regain it by silent and serious reflection. The felicity of an individual is grounded on the same laws that ensure the happiness of the species.

Conformably to this natural sentiment, the Paria divests himself of all the prejudices of his country. I have frequently looked upon it as one of the greatest misfortunes incident to humanity, that superstition should seize, even in early infancy, an innocent soul, which has no possibility of defending itself from its power: but considering how obstinate, intolerant, austere and cruel the superstitious are in every country, notwithstanding the means offered them by nature, in the course of their lives, to recal them to truth and to virtue, I discovered that superstition was, like atheism, a consequence of ambition, and that in like manner it was the punishment of the latter. You cannot render a child superstitious without exciting in him a religious ambition, either positive or negative: you begin by impressing him with fear, and he strives to terrify others in his turn. Every one is glad to communicate the object of his terror, but keeps to himself that of his hopes. * The most tyrannical religions have always obtained the greatest number of proselytes. It is, therefore necessary to prepare an innocent soul with some foreign vice, to make superstition fix upon it, in the same manner as alum is employed as a mordant for white wool before it is dyed black. The Paria, by dint of reflection, divests himself of the prejudices of the Bramins, and then finds himself in the state that Nature created him, like a savage who, on throwing off the dress in which Europeans have clothed him, escapes at once from the vanity they had excited, and the servitude to which they wanted to reduce him.

Many persons, on considering the errors and the terrors which seize the human mind, even in earliest infancy, and

* The superstitious man frequently turns atheist, for his probabilities of salvation being very few, and those of damnation innumerable, he has consequently much greater reason to fear than to hope; and in this anxiety he at length determines to believe nothing at all. He chuses rather to believe that there is no God, than that he is an eternal tyrant. The atheist seldom becomes superstitious, for the same reason that a man who is once dead cannot again fall sick. True religion is between superstition and atheism; it is the health of the soul.

envelope it during life, have wished for the profound solitude of the Paria, beneath the genial climate of India, in order to be preserved from their power; but we shall find retreats more inaccessible than the rocks, more delightful than the fig-trees of the Banians, if we retire into our own hearts. Fate might have caused us to be born at the time of the Druids, or under the tyranny of the Brahmins; or, what embraces every species of misery, in the form of an African Negro, consigned in America to the scourges and the opinions of Europeans, and adoring the very errors that make him wretched: in all these modifications of human misery, we should have received from Nature, as a counterpoise to the evils of societies, a soul friendly to truth. Let us then seek in ourselves and in Nature, who never deceives, that truth which is to enlighten us. O man, who believest that there is in the universe no other book than that in which thou hast been taught to read, no other light than what proceeds from thy glimmering lamp, look at the book of Nature and the orb of day, which shines for the instruction of every mortal! Read in Nature and thou wilt find that all truths emanate from God, as all lights from the sun. What then is requisite to collect and to retain them? A pure heart open to truth, and shut against prejudices. This Nature bestowed on thee at thy birth, in the same manner as she has given thee eyes to behold the light, and eye-lids to cover them.

THE

INDIAN COTTAGE.

ABOUT thirty years ago a society of English literati was formed at London, who undertook to visit the various regions of the globe, in quest of information in every department of science, with a view to enlighten mankind, and to make them more happy. The expences of this society were to be defrayed by subscriptions contributed by merchants, peers, bishops, the universities, the royal family, and even by several sovereigns of the north of Europe. These literati were twenty in number, and the Royal Society of London had furnished each of them with a volume, containing a list of the questions to which they were to procure answers. These questions amounted in number to 3500. Though they were all different for each of the travellers, and adapted to the country which they were about to visit, they were all connected with each other in such a manner that the light diffused over one, must necessarily have extended to all the others. The president of the Royal Society, who had drawn them up with the aid of his colleagues, was perfectly sensible that the explanation of one difficulty frequently depends on the solution of another, and this again on that which precedes it; so that we may be led, in the search of truth, much farther than we could have at first imagined. In short, to use the very expressions employed by the president in their instructions, it was the most splendid edifice that

any nation had ever erected for the purpose of promoting general knowledge; which, he added, was a sufficient proof of the necessity of academical societies to arrange and embody the truths dispersed over the whole extent of the earth.

Besides being provided with this volume of questions each of the learned travellers was commissioned to purchase by the way the most ancient copies of the Bible, and the rarest manuscripts of every kind, or at least to spare no pains to procure accurate copies of them. For this purpose the subscribers to the fund had procured all of them letters of recommendation to the consuls, ministers, and ambassadors of Great Britain in the places they were to visit; and what was still more useful, good bills of exchange, endorsed by the most eminent bankers in London.

The most learned of these doctors, who understood the Hebrew, Arabic, and Hindoo languages, was sent overland to the East Indies, the cradle of every art and of every science. He first went to Holland, and visited successively the synagogue of Amsterdam and the synod of Dordrecht; in France, the Sorbonne, and the Academy of Sciences at Paris; in Italy, a great number of academies, museums, and libraries; among the rest the Museum of Florence, the Library of St. Mark at Venice, and that of the Vatican at Rome. While in the last-mentioned city, he was uncertain whether he should go to Spain, to consult the famous university of Salamanca, before he proceeded to the East; but being afraid of the Inquisition, he determined to embark direct for Turkey. He repaired to Constantinople, where an Effendi permitted him, for money, to inspect all the books in the Mosque of St. Sophia. Leaving the Turkish metropolis, he went to Egypt, and after visiting the Copts, the Maranites of Mount Libanus, and the monks of Mount Cossin, he continued his journey to Sana in Arabia, and afterwards to Ispahan, Kandahar, Delhi, Agra. At length after a peregrination of three years he arrived on the banks of the Ganges at Benares,

the Athens of India, where he conferred with the Bramins. His collection of ancient editions, original works, rare manuscripts, copies, extracts and annotations of every kind, by this time exceeded in magnitude any thing that had ever been made by an individual. Suffice it to say, that it formed ninety packages, weighing together nine thousand five hundred and forty pounds, avoirdupois. He was on the point of embarking for London with this rich cargo of knowledge, overjoyed at having exceeded the hopes of the Royal Society, when a very simple reflection converted all his pleasure into mortification.

He considered that, after having conferred with the Jewish Rabbis, the Protestant Ministers, the Catholic Doctors, the Academicians of Paris, of la Crusca, of the Arcades, and twenty-four more of the most celebrated Academies of Italy, the Greek Papas, the Turkish Molhas, the Armenian Verbiests, the Persian Seidres and Casys, the Arab Sheikhs, the ancient Parsees, the Indian Pandects, so far from having elucidated any one of the three thousand five hundred questions of the Royal Society, he had only contributed to multiply doubts relative to them; and as they were all connected with each other, the result was the very reverse of the illustrious president's idea, namely, the obscurity of one solution darkened the evidence of another; the plainest truths had become quite problematical, and it was even impossible to discover a single one in this vast labyrinth of contradictory answers and authorities.

The doctor formed this judgment from a general survey. Among these questions were two hundred on the theology of the Hebrews; four hundred and eighty on that of the different communions of the Greek and Romish church; three hundred and twelve on the ancient religion of the Bramins; five hundred and eight on the Sanscrit or sacred language; three on the present state of the nations of India; two hundred and eleven on the commerce of the English in India; seven hundred and nineteen on the ancient

monuments in the island of Elephanta or Salsette, near Bombay; five on the antiquity of the world; six hundred and seventy-three on the origin of ambergris, and on the properties of the bezoar; one on the yet-unexamined cause of the current of the Indian ocean, which flows six months toward the east, and six months toward the west, and three hundred and seventy-eight on the sources and periodical inundations of the Ganges. On this occasion the doctor was advised to collect by the way all the information he could relative to the sources and inundations of the Nile, which for so many centuries engaged the attention of the learned in Europe: but he thought that this subject had been sufficiently discussed, and it was irrelevant to his mission. Now he had obtained upon an average five different solutions to each of the questions proposed by the Royal Society, which gave for the whole three thousand five hundred questions, a total of seventeen thousand five hundred answers; and supposing that each of his nineteen colleagues should bring home as many, the Royal Society would consequently have to resolve three hundred and fifty thousand difficulties, before they could establish one single truth on a solid basis. Thus their whole collection, instead of making each proposition converge towards one common centre, according to their instructions, would, on the contrary, cause them to diverge from each other, without any possibility of approximating them. Another reflexion likewise gave the doctor great uneasiness. It was this, that though he had employed in his laborious investigations all the coolness of his country, and a politeness for which he was eminently distinguished, he had yet made implacable enemies of all the doctors with whom he had argued. 'What then,' said he, 'can secure the peace of my countrymen, when, instead of truth, I bring them in my ninety bales new subjects of doubt and of dispute?

He was on the point of embarking for England, with a mind divided between perplexity and disgust, when the Bramins of Benares informed him that the superior Bramin

of the celebrated pagoda of Jagernaut, situated on the coast of Orixa, on the sea-shore, near one of the mouths of the Ganges, was alone capable of resolving all the questions of the Royal Society of London. He was, in truth, the most famous Pandect or doctor that ever was heard of; people came to consult him from all parts of India, and even from various other regions of Asia.

The English doctor immediately set out for Calcutta, and applied to the principal officer of the English East-India Company at that place, who, for the honor of his nation and the glory of the sciences, gave him for his conveyance to Jagernaut, a palanquin, with an awning of crimson silk with gold tassels, and two relays of vigorous coulis, or bearers, of four men each; two porters, a water-carrier, a carrier of refreshments, a pipe-bearer, a parasol-bearer, to screen him from the sun by day, a masalchi, or torch-bearer for the night; a wood-cutter, two cooks, two camels and their guides, to carry his provisions and his baggage; two runners to announce his approach; four seapoys, or rajahpoots, mounted on Persian horses to escort him, and a standard-bearer with a standard, on which were displayed the arms of England. You would have taken the doctor, with his splendid equipage, for some deputed agent of the India Company; but there was this difference, that instead of receiving, the doctor was commissioned to make presents. As it is not customary to appear empty-handed in India before persons in dignified stations, the governor gave him at the national expence, a beautiful telescope and a Persian carpet for the chief of the Bramins, some magnificent dresses for his wife, and three pieces of China taffeta, red, white, and yellow, to make scarfs for his disciples. The camels being laden with these presents, the doctor set out in his palanquin, with the book of the Royal Society.

By the way he considered what question he should first put to the chief of Bramins of Jagernaut, whether he should begin with one of the three hundred and sixty eight that

related to the sources and inundations of the Ganges, or that concerning the alternate and half-yearly currents of the Indian sea, which might contribute towards the discovery of the sources and periodical movements of the ocean over the whole globe; but though this question would have been infinitely more interesting to physics, than all the inquiries made for so many ages relative to the sources and inundations even of the Nile itself; it had not yet engaged the attention of the literati of Europe. He therefore preferred to interrogate the Bramin on the universality of the Deluge, which has excited so many disputes; or to go back still farther, and enquire whether it be true that the sun has several times altered his course, and risen in the west and set in the east, according to the tradition of the priests of Egypt, recorded by Herodotus; or to question him concerning the period of the creation of the world, to which the Indians give an antiquity of several millions of years. Sometimes he thought it would be more useful to consult him upon the best form of government for a nation, or upon the rights of man, of which no code exists in any country; but these last questions were not in his book.

However, said the doctor to himself, I should think it advisable in the first place to ask the Indian Pandect how it is possible to discover truth; for if this is to be done by means of reason, as I have hitherto been endeavoring to find it, reason varies in every individual. I must therefore ask him where truth is to be sought, for it is in books, they all contradict one another; and, lastly, whether truth should be communicated to men, for no sooner do you make them acquainted with it, than you set them at variance with you. These three preliminary questions were not thought of by our illustrious president. If the Bramin of Jagernaut can resolve them, I shall possess the key to all the sciences; and what is still more desirable I shall live in peace with all the world.

In this manner the doctor reasoned with himself. After

a journey of ten days, he reached the shores of the gulph of Bengal, and met a great number of people returning from Jagernaut, and extolling the knowledge of the chief of the Pandects whom they had been to consult. On the eleventh day at sun-rise, he perceived the famous pagoda of Jagernaut built on the sea-shores, which it overlooked with its high red walls, and its galleries, its domes, and its turrets of white marble. It rose from the centre of nine avenues of ever-verdant trees, which branch off towards the same number of kingdoms. Each of these avenues is formed of a different species of trees, of the areka-palm, the teak, the cocoa, the mango, the latanier, the camphor, the bamboo, the badamier, the sandal, and lead toward Ceylon, Golconda, Arabia, Persia, Thibet, China, Ava, Siam, and the islands of the Indian ocean. The doctor proceeded towards the pagoda by the avenue of bamboos, which runs along the bank of the Ganges, and by the enchanting islands at the mouth of the river. This pagoda, though situated in a plain, is so lofty, that the traveller who perceives it in the morning, cannot reach it before night. The doctor was filled with the highest admiration on a nearer view of its grandeur and magnificence. Its gates of brass glistened with the rays of the setting sun, and eagles hovered about its roof, which was lost in the clouds. It was surrounded by vast basins of white marble, which reflected in their pellucid waters its domes, its galleries, and its gates; all round it were immense courts and gardens enclosed by capacious buildings, the habitations of the Bramins, by whom the sacred edifice was attended.

The doctor's runners hastened to announce his arrival, and a company of young bayaderers immediately advanced from the gardens to meet him, singing and dancing to the sound of tabors. Round their necks they had collars made of the blossoms of mougris, and about their waists they had garlands of odoriferous flowers. Amidst their perfumes, their dancing and their music, the doctor proceeded to the

door of the pagoda, at the farther end of which he perceived, by the light of several lamps of gold and silver, the statue of Jagernaut, the seventh incarnation of Brahma, in the form of a pyramid, without feet or hands, which he had lost in the attempt to carry the world, in order to save it. At his feet a number of penitents lay prostrate, with their faces to the ground, some of whom promised aloud to hook themselves by the shoulders to his chariot on his festival, and others vowed to submit to be crushed to death under its wheels. Though the spectacle of these fanatics, who heaved deep sighs while pronouncing their horrible vows, excited a kind of terror, the doctor was preparing to enter the pagoda, when an aged Bramin, who officiated as door keeper, stopped him and inquired what business had brought him thither. Being made acquainted with it, he told the doctor that, as he was a frangui, or impure man, he could not be permitted to appear before Jagernaut, or his high priest, till he had washed himself three times in one of the lavers of the temple, and had stripped off every thing that had belonged to any animal; that he must not have about him, in particular, either the hair of cows, because they are adored by the Bramins, or of hogs, because they hold those creatures in abhorrence. "What then shall I do?" replied the doctor. "I have brought as presents to the chief of the Bramins, a Persian carpet, made of the hair of the goat of Angora, and China stuffs, which are of silk." "All offerings," replied the Bramin, "to the temple of Jagernaut, or to his high priest, are purified by the very gift; but this cannot be the case with your garments." The doctor was therefore obliged to take off his coat of English wool, his goat-skin shoes, and his beaver hat; after which an aged Bramin, having washed him three times, covered him with a kind of cotton stuff, of a yellow color, and conducted him to the entrance of the apartment of the chief of the Bramins. The doctor was preparing to enter, carrying under his arm the volume of questions by the Royal Society, when his conductor inquired with what

material the book was covered. "It is bound in calf," replied the doctor. "What!" said the enraged Bramin, "have I not told you that the cow was adored by the Bramins, and would you presume to appear before their chief with a book covered with calf's skin?" The doctor would have been obliged to return and purify himself in the Ganges, had he not spared himself the trouble, by presenting a few pagodas to his conductor. He therefore left the book of questions in his palanquin, consoling himself with the reflection, that he had only three questions to ask of the Indian doctor. I shall be perfectly satisfied, said he, if he tells me how truth should be sought, where it may be found, and whether it should be communicated to men.

The aged Bramin now introduced the English doctor, clad in his cotton robe, bare-headed and bare-footed, to the high priest of Jagernaut, seated in a vast saloon, supported by columns of sandal wood. The walls were green, being plastered with stucco mixed with cow dung, so brilliant and so highly polished, that you might see your face in it. The floor was covered with very fine mats, six feet square. At the farther end of the saloon was an alcove, surrounded with a balustrade of ebony; and over this alcove was seen through a lattice-work of red-tinged bamboo, the venerable chief of the Pandects with his white beard, and three stripes of cotton, fastened like a shoulder-belt, according to the custom of the Bramins. He was sitting cross-legged on a yellow carpet, so completely motionless, that he did not even turn his eyes. Some of his disciples were driving the flies from him with fans of peacock's feathers; others were burning the wood of the aloe in silver censors; and others were playing in the softest manner on the dulcimer: the rest, in great numbers, among whom were faquirs, joguis and santons, were ranged in several rows on either side of the hall, in profound silence, with their eyes fixed on the ground, and their arms crossed on their bosoms.

The doctor was advancing to the chief of the Pandects to pay his compliments, but his conductor stopped him at

the distance of nine mats, telling him that the omrahs, or grandees of India, were never suffered to go any farther; that the rajahs, or Indian sovereigns, advanced no nearer than within six mats; the princes, the sons of the Mogul, no nearer than three; and that the Mogul alone was allowed the honor of approaching so near to the venerable chief as to kiss his feet.

Meanwhile several Bramins carried to the foot of the alcove the telescope, the silks, and the carpet, which the doctor's attendants had brought to the entrance of the hall; and the aged Bramin having looked at them without giving any mark of approbation, they were conveyed into the interior of the apartments.

The English doctor was then going to begin a very florid harangue in the Hindoo language, when his conductor informed him that he must be silent till the high priest should speak to him. He then directed him to squat down on his heels, cross-legged like a tailor, according to the custom of the country. The doctor murmured within himself at so many formalities; but what will not a man do in order to find truth, especially after he has travelled so far as India in quest of it?

As soon as the doctor was seated, the music ceased, and after a profound silence of a few moments, the chief of the Pandects enquired the cause of his visit to Jagernaut.

Though the high priest of Jagernaut had spoken in the Hindoo language so distinctly as to be heard by the whole assembly, his words were repeated by one faquir to a second, by the second to a third, by whom they were repeated to the doctor. The latter replied in the same language, that, having heard of the extraordinary reputation of the chief of the Bramins, he had come to Jagernaut to consult him, and to enquire the means by which truth might be discovered.

The doctor's answer was conveyed to the chief of the Pandects by the same interlocutors that had transmitted

the question; and the rest of the conversation was conducted in the same manner.

After a little recollection the aged chief of the Pandects replied: "Truth can be known only by means of the Bramins." The whole assembly bowed, impressed with admiration for the answer of their chief.

"Where must truth be sought?" abruptly rejoined the English doctor. "All truth," replied the aged Indian seer, "is contained in the four beths, written one hundred and twenty thousand years ago, in the Sanscrit language, which is known only to the Bramins."

"At these words shouts of applause resounded from the whole saloon.

The doctor recovering his temper, then said to the high priest of Jagernaut: Since God has confined truth to books, which are only understood by the Bramins, it must thence follow that God has withheld the knowledge of it from the greatest part of mankind, who are ignorant even of the existence of Bramins. Now, were this the case, God would not be just."

"Such was the will of Brama," replied the high priest "It is impossible to oppose the will of Brama." The plaudits of the assembly became still louder. As soon as they had abated, the Englishman proposed his third question: "Ought truth to be communicated to men."

"It is often prudent," said the aged Pandect, "to conceal it from the world, but it is the duty of all to tell it to the Bramins."

"What!" cried the indignant English doctor, "should the truth be told to the Bramins, who never communicate it to any one? In truth the Bramins are exceedingly unjust."

These words produced a dreadful tumult in the assembly They had heard God taxed with injustice without murmuring; but they could not so calmly hear the same reproach made against themselves. The Pandects, the Faquirs, the Santons, the Joguis, the Bramins, and their disciples, were all desirous to argue at once with the English doctor; but

the high priest of Jagernaut commanded silence, by striking with his fists, and saying with a loud voice: "The Bramins dispute not like the doctors of Europe." He then rose, and retired amidst the acclamations of the whole assembly, who murmured loudly against the doctor, and would probably have done him a mischief, but for fear of the English, whose credit is all-powerful on the banks of the Ganges. The doctor having quitted the saloon, his conductor said to him: "Our most venerable father would, according to custom, have caused sherbet, betel, and perfumes to be presented to you; but you have excited his anger."—"'Tis I that ought to be angry," replied the doctor, "for having taken so much useless trouble. But what cause can your chief have to complain?"—"What!" answered his guide, "would you pretend to dispute with him? Do not you know that he is the oracle of India, and that every one of his words is a ray of intelligence?—"I never doubted it," said the doctor, putting on his coat, his shoes, and his hat. The weather was tempestuous and night approached; he requested leave to remain in one of the apartments of the pagoda, but this was refused him, because he was a frangui. As the ceremony had made him thirsty, he asked for something to drink. Some water was brought him in a cup, which was broken as soon as he had done drinking, because, as a frangui, he had polluted it with his touch. The doctor, highly incensed, called his attendants, prostrate in deep adoration on the steps of the pagoda, and seating himself in his palanquin, he returned by the bamboo alley, along the sea-shore, it being now dusk, and the sky overcast with clouds. He said to himself by the way: The Indian proverb is but too true, that every European who comes to India, acquires patience if he has none, or loses it if he has. For my part, I have certainly lost mine. How provoking, that I cannot learn by what means truth may be found, where it should be sought, and whether it ought to be communicated to men! Man, therefore, is doomed over the whole world

to errors and disputes: it was truly worth while to come to India to consult the Bramins on the subject.

While the doctor was thus reasoning in his palanquin, one of those storms which in India are called a typhion, came on. The wind blew from the sea, and drove back the waters of the Ganges, which broke foaming against the islands at its mouth. It swept from their shores columns of sand, and from their forest clouds of leaves, which it carried across the river and the fields to a great height into the air. Sometimes it spent its force among the bamboos, and though these Indian reeds are as high as the tallest trees, it agitated them like the grass in the field. Amid clouds of dust and of leaves was perceived their long undulating avenue, one part of which was bending to the right and left to the ground, while the other rose again with a creaking noise. The doctor's people, afraid lest they should be crushed by them, or carried away by the waters of the Ganges, which already began to overflow their banks, turned off across the plain, directing their steps at random towards the neighboring eminences. Night, however, came on, and they proceeded three hours in the most profound darkness, not knowing whither they went, when a flash of lightning, cleaving the clouds, and illumining the whole horizon, enabled them to perceive the pagoda of Jagernaut, the islands of the Ganges, and the agitated sea, at a great distance to their right, and close to them a little valley with a wood, situated between two hills. Thither they hastened for shelter, and already heard the dismal roaring of the thunder when they reached the entrance of the valley. It was flanked with rocks, and covered with aged trees of prodigious size. Though the tempest bowed their tops with a terrible roaring, their enormous trunks stood as unshaken as the rocks by which they were surrounded. This portion of the ancient forest seemed to be the asylum of repose, but it was difficult to penetrate it. Rotins, which crept around its skirts, covered the foot of the trees, and liannes, entan-

gled from trunk to trunk, formed a rampart of foliage, behind which appeared caverns of verdure, but without any entrance. The rajahpoots, however, opened a passage with their sabres, and the whole retinue entered with the palanquin. Here they thought to find shelter from the storm, when the rain, descending with excessive violence, formed around them a thousand torrents. In this dilemma they espied a light and a hut, beneath the trees in the narrowest part of the valley. The masalchi hastened to light his flambeau; but soon returned, out of breath, crying: "Dont go near the house; it belongs to a Paria." The whole affrighted troop immediately exclaimed: "A Paria! a Paria!" The doctor, supposing it to be some ferocious beast, seized his pistols. "What is a Paria?" said he to the torch-bearer. "'Tis a man who has neither faith nor law." "'Tis an Indian," added the chief of the rajahpoots, "of a cast so infamous, that it is lawful to kill him if he only touches you. If we enter his house we shall not be permitted for nine moons to set foot in any pagoda, and to purify ourselves, we must bathe nine times in the Ganges, and be washed as many times from head to foot with cow's urine, by the hands of a Bramin." "No," cried all the Indians, "we will not enter the house of a Paria!" "How could you tell," said the doctor to the torch-bearer, "that your countryman was a Paria, that is, a man without faith or law?" "When I opened the door of his hut," answered the torch-bearer, "I saw him lying with his dog on the same mat with his wife, to whom he was giving some drink in a cow's horn." "No," repeated all the doctor's attendants, "we will not enter the habitation of a Paria." "Stay here, if you please," said the Englishman; "for my part all the casts of India are alike to me, when I am seeking a shelter from the rain."

So saying he leaped out of his palanquin, put his book of questions and his night-cap under his arm, and taking his pistols and his pipe in his hand, proceeded alone to the door of the hut. No sooner had he knocked, than a

man of a very mild countenance opened the door, and immediately drew back, saying: "Sir, I am but a poor Paria, who am unworthy to receive you, but if you think fit to take shelter here, you will do me great honor." "Brother," replied the Englishman, "I willingly accept your hospitality." The Paria then went out with a torch in his hand, a load of dry wood on his shoulder, and a basket full of cocoa-nuts and bananas under his arm; he approached the doctor's attendants, who were at some distance from the hut under a tree, and said to them: "Since you will not do me the honor to come to my habitation, here are fruits wrapped in their rinds, which you may eat without fear of pollution, and there is fire to dry yourselves, and to protect you from the tigers. God preserve you!" He immediately returned to his hut, and said to the doctor: "Sir, I repeat to you that I am only an unfortunate Paria; but as I perceive by your complexion and your dress that you are not an Indian, I hope you will not dislike the victuals which your poor servant shall set before you." At the same time he placed on a mat upon the floor, mangoes, cream-apples, yams, potatoes roasted in the ashes, broiled bananas and a dish of rice prepared with sugar and cocoa-nut milk, after which he withdrew to his mat seating himself by his wife and his infant child, who was asleep near her in a cradle. "Virtuous man," said the Briton, "you are much my superior, since you do good to those who despise you. If you refuse to honor me with your company on the same mat, I shall believe that you take me for a wicked man, and shall instantly leave your hut, were I even to be drowned by the rain, or devoured by tigers."

The Paria then advancing, sat down on the same mat with his guest, and both began to eat. Meanwhile the doctor enjoyed the pleasure of being under shelter in the midst of the tempest. The hut was as immoveable as a rock: it was not only situated in the narrowest part of the valley, but was built under a *war*, or banian fig-tree, the ends of the branches, bending down to the ground, take root

and form as many arches, which support the principal stem. The foliage of this tree was so thick, that not a drop of water penetrated through it; and though the hurricane howled horribly, and the pealing thunder rolled over head, yet the smoke of the fire which passed through the middle of the roof, and the flame of the lamp were not in the least agitated. The doctor admired the tranquillity of the Indian and his wife, still more profound than that of the elements. Their child, black and smooth as ebony, slept in its cradle, which the mother rocked with her foot, while she amused herself with making for her infant a necklace of red and black Angola peas. The father looked with eyes beaming affection, first at one and then at the other. The very dog participated in the general happiness; he lay with a cat before the fire, opened his eyes from time to time, and looked with a sigh at his master.

As soon as the Englishman had done eating, the Paria held him a live coal to light his pipe; and having lighted his own, he made a sign to his wife, who placed upon the mat two cocoa-nut-shell goblets, and a large calabash full of punch, which she had made during supper, with water, arrack, lemon juice, and the juice of the sugar-cane.

While they were smoking and drinking by turns, the doctor said to the Indian: "In my opinion you are one of the happiest, and consequently one of the wisest men that I ever met with. Permit me to ask you a few questions. How comes it that you are so tranquil in the midst of such a tremendous storm? You have no other covering than a tree, and trees attract lightning."—"Never was there an instance," replied the Paria, of a banian fig-tree being struck by lightning."—"That is very curious," replied the doctor, "that tree must undoubtedly have a negative electricity, like the laurel."—"I do not understand you," answered the Paria, "but my wife believes that the reason of it is because Brama one day took shelter under its foliage: for my part I think that God, having given the banian fig-tree very thick foliage and arched bowers to

shelter man from storms in this tempestuous climate, does not permit them to be struck by lightning."—"Your answer is truly religious," rejoined the doctor. "Then it is your confidence in God that imparts such composure to your mind. A good conscience is much more cheering than knowledge. Tell me, I pray, to what sect you belong; for you are not of any of those that are found in India, since no Indian will associate with you. In the list of learned casts which I have consulted in my travels, I have not found that of the Parias. In what part of India is your pagoda?"—"Every where," replied the Paria; "my pagoda is Nature; I adore her author at the rising of the sun, and bless him at the decline of day. Taught by misfortune, I never refuse my aid to one more wretched than myself. I endeavor to make my wife, my child, and even my cat and my dog happy. I await death at the end of my life, as a sweet slumber at the close of day."—"From what book have you imbibed these principles?" asked the doctor.—"From that of Nature," replied the Indian, "I know no other."—"Ah!" rejoined the Englishman, "that is a great book: but who taught you to read in it?"—"Adversity," answered the Paria. "As I was of a cast reputed infamous in my country, and could not be an Indian, I made myself a man; being an outcast from society, I sought refuge with Nature."—"But you must at least have a few books in your retirement," said the doctor.—"Not one,' said the Paria, "I cannot even read or write."—"You have spared yourself many doubts and difficulties," said the doctor, rubbing his forehead: "as for me, I have been sent from England, my native country, to seek truth among the learned of many nations, in order to enlighten men, and make them more happy: but after much useless research, and many serious disputes, I have concluded that it is folly to seek truth, because when you have found it, you cannot declare it without making a great number of enemies. Tell me now sincerely, are not you of the same opinion?"—"Though I am but an igno-

rant man," answered the Paria, "since you permit me to express my opinion, I think that it behoves every man to seek truth for his own happiness; otherwise he would be avaricious, ambitious, superstitious, nay even a cannibal, according to the prejudices or interests of those by whom he was educated."

The doctor, who still bore in mind the three questions he had proposed to the chief of the Pandects, was delighted with the answer of the Paria. "Since you believe," said he, "that it behoves every man to seek the truth, tell me what means should he employ to discover it; for our senses frequently delude us, and our reason leads us still farther astray. Reason varies almost in every individual; in fact, I should conceive that it is nothing more than the particular interest of each of them: and on this account it differs so much all over the world. There are not two religions, two nations, two tribes, two families, nay, not even two men that think alike. With what sense then should truth be sought, if that of intelligence cannot be employed for the purpose!"—"I should imagine," replied the Paria, "that it should be sought with a simple heart. The senses and the understanding may be deceived; but a simple heart, though it may itself be deluded, never deludes"

"Your answer is just," said the doctor. "Truth should be sought with the heart, and not with the understanding. All men feel in the same manner, and reason differently, because the principles of truth are in Nature, and the consequences they deduce from them are their interests. Truth must, therefore, be sought with a simple heart; for a simple heart never pretended to understand what it did not understand, or believe what it did not believe. It is not instrumental either in deceiving itself or others; accordingly, a simple heart, instead of being weak like those of most men seduced by their interests, is strong, and adapted to the search of truth."—"You have explained my idea much better than I could have done," replied the

Paria; "truth is like the dew of heaven; to keep it pure, it must be received in a pure vessel."

"Admirably well said, sincere man!" answered the Briton; "but the most difficult part still remains to be settled. Where should truth be sought? A simple heart depends on ourselves, but truth depends on others. Where shall we find it, if those about us are seduced by their prejudices, or corrupted by their interests, as they in general are? I have visited many nations: I have ransacked their libraries; I have consulted their doctors, and have found nothing but contradictions, doubts, and opinions, a thousand times more varied than their languages. If truth cannot be found in the most celebrated store-houses of human knowledge, whither shall we go in quest of it? What advantage shall we derive from the possession of a simple heart, among men of false understandings and corrupted hearts?—" I should be inclined to suspect truth," answered the Paria, "were it conveyed to me only through the medium of men: it is not among them, but in Nature that it should be sought. Nature is the source of every thing that exists: her language is not unintelligible and variable like that of men and of their books. Men made books, but Nature makes things. To ground truth on a book would be as absurd as to deduce it from a picture or a statue, which can instruct only one country, and which time is daily impairing. All books are the art of man, but Nature is the art of God."

"You are perfectly right," answered the doctor. "Nature is the source of natural truths, but where exists the source of historical truths, for example, if not in books? How can we, at the present day, ascertain the truth of a circumstance which occurred two thousand years ago? Were those by whom it has been transmitted to us, free from prejudices and from party-spirit? had they a simple heart? Besides have not the books they transmit to us occasion for copyists, printers, commentators, translators; and do not all these alter the truth more or less? as you

justly observe, a book is but the art of man. We must, therefore, renounce all historic truth, since we receive it through the medium of men, liable to error."—"Of what importance to our happiness," said the Indian, "is the history of past events? The history of the present, is the history of the past and of the future."

"Very well," said the Englishman; "but you will admit that moral truths are necessary for the happiness of mankind. How are these to be found in Nature? The animals wage war, kill and devour each other; the very elements contend with the elements: shall men follow their example?"—"Oh, no!" replied the good Paria, "but every man will find the rule of his conduct in his own heart, if his heart be simple. Nature has engraved on it this law: Do not to others what you would not that others should do to you."—"It is true," answered the doctor; "she has regulated the interests of mankind by those of individuals: but how are religious truths to be discovered among so many traditions and forms of worship which divide nations?"—"In Nature herself," said the Paria; "if we contemplate her with a simple heart we shall there behold God in his power, his intelligence, his bounty; and as we are feeble, ignorant and miserable, this is sufficient to make us adore and love him all our lives, without engaging in foolish disputes."

"Admirable," exclaimed the Englishman. "But now answer me this question; when we have discovered the truth, ought we to communicate it to others? If you publish it you will be persecuted by an infinite multitude of persons who live by the contrary error, maintaining that this very error is truth, and that whatever tends to destroy it is error."—"Truth," replied the Paria, "should be told only to such as have simple hearts, that is, to good people who seek it, and not to the wicked by whom it is rejected. Truth is like a valuable pearl, and the wicked man like a crocodile, who cannot hang it to his ears, because he has none. Throw a pearl to a crocodile; instead of adorning

himself with it, he would try to devour it; he would break his teeth, and rush furiously upon you as the cause of his disappointment.'

"I have but one more objection to make," said the Englishman, "which is this. From what you have said, it follows that men are doomed to error, though truth is necessary for them; for since they persecute those who proclaim it, what teacher will venture to undertake the task of instructing them?"—"That teacher," replied the Paria, "who persecutes men with a view to enlighten them; I mean adversity."—"For once I think you are mistaken, man of Nature," replied the Englishman. "Adversity plunges men into superstition; it debases the heart and the understanding. The more wretched men are, so much the more vile, credulous, and servile they are."—"That is because they are not sufficiently wretched," rejoined the Paria. "Adversity resembles the black mountain of Bember on the confines of the burning kingdom of Lahor; while you are ascending you perceive nothing before you but barren rocks, but when you have gained the summit, you see the heavens over your head, and at your feet the delicious plains of Cashmir."

"A just and charming comparison!" replied the doctor, "every man has, indeed, in this life, his mountain to climb. Yours, virtuous recluse, must have been very rugged; for you have raised yourself to an elevation which no man that I ever knew had attained. You must have experienced great distress. But tell me for what reason is your cast so degraded, and that of the Bramins so highly honored in India? I have been to visit the superior of the pagoda of Jagernaut, who thinks no more than his idol, and is adored like a god."—"The reason is," replied the Paria, "because the Bramins pretend that they originally sprung from the head of Brama, and that the Parias issued forth from his feet. They add farther, that Brama, as he was travelling one day, applied for some refreshment to a Paria, who set before him human flesh. Since that time their cast has

been honored, and ours held in abhorrence throughout all India. We are not permitted to approach the towns, and any naire or rajahpoot may kill us, if we go only so near as to breathe upon him."—"By St. George," exclaimed the Briton, "that is exceedingly foolish and unjust! How could the Bramins have persuaded the Indians to believe such nonsense?"—"By instilling it into their minds in their infancy," answered the Paria; "and by incessantly repeating it to them: men may be taught like parrots."—"Unfortunate man!" said the doctor, "how did you contrive to extricate yourself from the abyss of infamy into which the Bramins had plunged you at your very birth? No greater calamity can befal a man, than to be debased in his own eyes; he is thus deprived of the first of consolations; for the most soothing of all is that which is found in the resources of his own mind."

"I first said to myself," replied the Paria: "Is the history of the god Brama true? It is related by none but the Bramins, who are interested in ascribing to themselves a celestial origin. They have, undoubtedly, invented the story of the Paria who endeavoured to make Brama a cannibal, to revenge themselves on the Parias, for refusing to believe the reports they circulated concerning their sanctity. I reflected farther: Admitting this circumstance to be true, God is just; he cannot involve a whole cast in the guilt of one of its members, when the cast had no participation in it. But supposing the whole cast of Parias had been accomplices in this crime, their descendants could not have been implicated. God punishes not in the children the faults of their ancestors whom they never saw, any more than he punishes in the forefathers, the sins of their unborn descendants. But farther, supposing I am now included in the punishment of a Paria guilty of perfidy against his god, thousands of years ago, without having participated in that guilt, can any thing, hated of God, continue to exist, and not be immediately destroyed? If I lay under the divine malediction, nothing that I plant

would thrive. Lastly, I said to myself, Admitting that I am hated of God, who is good to me, I will endeavour to make myself agreeable to him, by following his example, and doing good to those whom I ought to hate."

"But," asked the Englishman, "how did you contrive to live, being an outcast from the world?" —"In the first place," answered the Indian, "I reasoned in this manner: If all mankind are thine enimies, be a friend to thyself. Thy calamity is not too heavy for human strength. Be the rain ever so violent, a little bird receives but a drop at a time. I rambled in the woods, and on the banks of the rivers in quest of food, but in general could find nothing but some wild fruit, and was under great apprehensions from beasts of prey. Hence I was convinced that Nature had made scarcely any thing for man alone, and that she had attached my existence to that very society which had cast me out from its bosom. I then repaired to the deserted fields, which are very numerous in India, and always found some eatable plant which had survived the ruin of its cultivators. In this manner I roved from province to province, certain of finding every where a subsistence amid the relics of agriculture. When I found the seeds of any useful vegetable, I sowed them, saying; 'If I reap no benefit from them, others will.' I felt myself less wretched when I saw that I could do some good. There was one desire which I was very anxious to gratify, that of visiting some towns. I admired at a distance their ramparts and their towers, the prodigious concourse of vessels on their rivers, and caravans on their roads, laden with merchandise, conveyed thither from every point of the horizon; the troops who repaired thither on duty from the remotest provinces; the processions of ambassadors with their numerous retinues, arriving from foreign kingdoms, to make known fortunate events, or to conclude alliances. I approached as near as I might to their avenues, contemplating with astonishment the vast columns of dust raised by so many travellers, and I trembled with desire at the

confused noise proceeding from great cities, which sounds in the adjacent country like the murmuring of the waves breaking on the sea-shore. I said to myself: An assemblage of men of so many different conditions, uniting their industry, their riches, and their joy, must make a city a most delightful abode. But if I am not permitted to approach by day, what should prevent me from entering by night? A feeble mouse, which has so many enemies, goes to and fro wherever he pleases under cover of the darkness; he passes from the hut of the beggar to the palace of the king. The light of the stars is sufficient to enable him to enjoy life; why should I require that of the sun? It was in the vicinity of Delhi that I made these reflections; they emboldened me to approach the city at night, and I entered by the gate of Lahor. I first traversed a long solitary street, lined on either side with houses, in front of which are piazzas, and under these the shops of tradesmen. Here and there observed large caravanseras securely shut up, and vast bazars, or markets, where reigned profound silence. Advancing into the interior of the city, I came to the magnificent quarter of the Omrahs, full of palaces and gardens, situated on the banks of the Jumna. It rang with the sounds of instruments and the songs of the bayadares, who were dancing by the river-side by torch-light. I stopped at the gate of a garden to enjoy such a pleasing sight, but but was soon compelled to retire by the slaves, who drive away the poor with sticks. On leaving the quarter of the grandees, I passed by several pagodas of my religion, where a multitude of wretches were lying prostrate on the ground and weeping. I hastened away from these monuments of superstition and of terror. Farther on, the loud voices of the mollahs, announcing from aloft the hours of the night, informed me that I was at the foot of the minarets of a mosque. Near this place were the factories of the Europeans, with their flags, and watchmen incessantly crying: *Kaberdar!* take care! I then passed a large building, which I knew to be a prison from the clankling

of chains, and the groans that proceeded from it. I soon heard the cries of pain from a vast hospital, out of which were conveyed cart-loads of dead bodies. By the way I met thieves running along the streets, and watchmen pursuing them; groups of beggars who, in spite of the blows they received, continued their solicitations at the gates of the palaces, for the offal of their banquets, and women who publicly prostituted themselves for a subsistence. At length I arrived at an immense square, in the centre of which stands the palace of the Great Mogul. It was covered with the tents of the rajahs, or nabobs of his guard, and their divisions, distinguished from each other by torches, standards, and long canes, with tails of the cows of Thibet at the top: the fortress was surrounded by a wide ditch full of water, and defended by artillery. By the light of the fires kindled by the guards, I contemplated the towers of the castle which were lost in the clouds, and the length of the ramparts, which extended farther than the eye could reach. I should have liked to enter, but great korahs, or scourges, suspended from the posts, took away all desire of setting foot in the place. I stopped, therefore, at one end of it, near some negro slaves, who permitted me to rest myself by the fire round which they were sitting. There I viewed the imperial palace with admiration, and said to myself: Here then he dwells the happiest of men; it is for his obedience that so many religious preach; for his glory that so many ambassadors arrive; for his exchequer that so many provinces are stripped; for his pleasures that so many caravans travel; and for his safety that so many armed men watch in silence!

"While I was making these reflections, loud shouts of joy resounded over the whole square, and I saw eight camels, decorated with streamers, pass by. I was informed that they were loaded with the heads of rebels, sent to the Mogul by his generals from the province of Decan, where one of his sons, whom he had appointed governor, had

been carrying on war with him for three years. Soon afterwards arrived a courier on a dromedary, bringing intelligence of the loss of a frontier town of India, through the treachery of the governor, who had delivered it up to the king of Persia. Scarcely had this courier passed, when another dispatched by the governor of Bengal, came to announce that the Europeans, to whom the emperor for the benefit of commerce, had granted a factory at the mouth of the Ganges, had built a fortress there, and made themselves masters of the navigation of the river. A few minutes after the arrival of these two couriers, an officer came out of the palace at the head of a detachment of guards. The Mogul had ordered him to go to the quarter of the Omrahs, and to bring three of the principal of them in chains, being accused of a correspondence with the enemies of the state. He had the night before caused a Mollah to be confined, for having in his sermons pronounced a panegyric on the king of Persia, and declared the emperor of India an infidel, because he drank wine, in violation of the law of Mahomet. It was further reported that he had ordered one of his wives and two captains of his guard to be strangled, and thrown into the Jumna, for being concerned in the rebellion of his son. While I was reflecting on these tragic occurrences, a long flame of fire rose all at once from the kitchens of the seraglio: volumes of smoke mingled with the clouds, and its red light illumined the towers of the fortress, its ditches, the square, the minarets of the mosques, and extended to the very horizon. Large kettle-drums of copper, and the karnas, or hautboys of the guard, immediately gave the alarm with a dreadful noise: troops of cavalry spread over the city, breaking open the doors of houses near the palace, and obliging the inhabitants with stripes to hasten to extinguish the fire. I too found how dangerous the neighbourhood of the great is to the little. The great are like the fire which burns even those who throw incense into it, if they approach too near. I endeavoured

to escape, but all the avenues of the square were blocked up. I should have found it impossible to get away, had not the side on which I was providentially been that of the seraglio. As the eunuchs were removing the women from it upon elephants, they facilitated my escape; for as fast as the guards compelled the inhabitants, with stripes, to go and assist at the fire, the elephants, with their trunks, obliged them to retire. Now pursued by the one, now driven back by the others, I at length escaped from amidst this terrible confusion, and by the light of the fire proceeded to the other extremity of the suburbs, where, in their humble cottages, far from the great, the poor rested in piece from their labors. There I again began to take breath. I said to myself: I have at last seen a city; I have beheld the abode of the masters of nations! Oh! by how many masters are not they themselves enslaved! Even in the season of repose, they are subservient to voluptuousness, ambition, superstition and avarice: they have reason to fear, even in their sleep, a multitude of wretched and mischievous creatures by whom they are surrounded, robbers, beggars, prostitutes, incendiaries, and their very soldiers, priests, and grandees. What must be the state of this city by day, if it is so turbulent during the night? The miseries of man increase with his pleasures. How much, then, is the emperor, who possesses them all, to be pitied! He has occasion to fear civil and foreign wars, and the very objects that constitute his consolation and his defence, his generals, his guards, his mollahs, his wives and his children. The ditches of his fortress cannot check the phantoms of superstition, nor can his well-trained elephants repel gloomy cares. For my part, I fear none of all these things; no tyrant possesses any empire either over my body or my soul. I can serve God according to the dictates of my conscience, and have nothing to apprehend from man, if I do not torment myself: in truth, a Paria is less wretched than an emperor. As I uttered these words, my eyes overflowed with tears; and dropping

upon my knees, I returned thanks to heaven, which, to teach me to endure my miseries, had exhibited to my view others still more intolerable.

"Since that time I have confined my visits to the suburbs of Delhi; there I beheld the stars shining upon the habitations of men and mingling with their fires, as if the heavens and the city had formed one and the same domain. When the moon rose to illumine the scene, I perceived other colors besides those of day. I admired the silvery hue of the trees reflected at a distance in the waters of the Jumna. I traversed unmolested whole quarters solitary and silent, and the entire city then seemed to be my own; and yet its inhabitants would have refused me a handful of rice, so great was the detestation in which religion caused me to be held! As I could not find a subsistence among the living, I sought it among the dead, I repaired to the cemeteries to eat upon the tombs the food offered there by the piety of relations. Here I loved to meditate: Here, said I to myself, is the city of peace; here neither power nor pride can intrude; here innocence and virtue are secure; here all the fears of life, even that of dying, are extinct; here is the inn where the weary traveller rests for ever from his fatigues, and here the persecuted Paria reposes. With such ideas I began to think death desirable, and to despise the world. I fixed my eyes on the sky, where multitudes of stars were every moment bursting forth to view. Though a stranger to their destinies, I was convinced that they were connected with those of men, and that Nature, who has rendered so many things which they cannot see subservient to their wants, had assuredly connected with them such as she had placed in their sight. My soul then soared into the firmament among the stars, and when Aurora added her rosy tints to their soft and everlasting rays, I fancied myself at the portals of heaven. But no sooner did her beams gild the tops of the pagodas, than I disappeared like a spirit; I withdrew far from men, to repose in the fields at the foot

of some tree, where I was lulled to sleep by the singing of birds."

"Tender and unfortunate man!" exclaimed the Briton; "how affecting is your narrative! Believe me most cities are not worth seeing but by night. After all, Nature has nocturnal beauties which are not the least touching; a famous poet of my country has celebrated no others. But, tell me, how did you contrive to make yourself happy by daylight?"

"It was a great thing," replied the Indian, "to be happy by night. Nature resembles a beautiful woman, who by day exhibits only the beauties of her face to the eyes of the vulgar, but at night reveals all her secret charms to her lover. But if solitude has its pleasures, it has likewise its privations; it appears to the unfortunate a peaceful haven, whence he beholds, unaffected, the impetuous current of the passions of others; but while he is congratulating himself on his tranquility, time hurries him also along. It is impossible to cast anchor in the river of life; it carries away both the man that struggles against its current, and him who abandons himself to it, the wise man as well as the fool, and both arrive at the conclusion of their days, one after abusing, and the other without enjoying them. I desired not to be wiser than Nature, nor to find happiness beyond the limits of the laws she has prescribed for man. I ardently wished for a friend to whom I might communicate my pleasures and my pains. Such a person I long sought among my equals, but found them all infected with envy. I, however, found one that was affectionate, grateful, faithful, untainted with prejudices: he was not, indeed, of my species; it was the dog you there see at your feet. He had been turned out, when quite young, into the street, where he was near perishing of hunger. I felt compassion for his fate; I took care of him; he grew attached to me, and I made him my inseparable companion. This was not sufficient: I wanted a friend that was more wretched than a dog,

who was acquainted with all the miseries of human life, and could assist me to bear them; who was desirous only of the gifts of Nature, and with whom I could enjoy them. It is only by entwining their branches that two feeble shrubs are able to resist the storm. Providence accomplished my wishes by giving me a good wife. At the source of my wretchedness I found that of my felicity. One night when I was in the cemetery of the Bramins, I perceived by the moon-light a young female Bramin, half covered with her yellow veil. At the sight of a woman of the blood of my tyrants, I drew back with horror, but I approached her from compassion, when I beheld the duty in which she was engaged. She was placing food upon a hillock that covered the ashes of her mother, who had recently been burned alive, with the corpse of her father, according to the custom of the east; she was burning incense over it to call her spirit. My eyes filled with tears on beholding a person more wretched than myself. Alas! I exclaimed; I am bound by the bonds of infamy; but thou by those of glory. At any rate I live peacefully at the bottom of my precipice, while thou totterest on the brink of thine. The same doom which has befallen thy mother, threatens one day to be thy own. Thou has received but one life, and thou must die two deaths: if thy own death should not bring thee to the grave, that of thy husband will plunge thee into it alive. I wept and she wept: our eyes, suffused with tears, met and spoke to each other the language of affliction; she turned from me, covered herself with her veil, and retired. The next night I repaired to the same place. This time she had placed a greater quantity of food on the grave of her mother; she judged that I wanted it, and as the Bramins frequently poison their funeral meats to prevent the Parias from eating of them, she brought nothing but fruit, that I might entertain no apprehension of the kind. I was touched with this token of her humanity, and to shew the respect I felt for her filial offering, instead of taking her

fruits, I strewed flowers over them. These were poppies, expressive of the part I took in her sorrows. The next night I observed with joy that she approved my homage; the poppies were watered, and she had placed a fresh basket of fruit at some distance from the grave. Compassion and gratitude made me bold. Not daring to speak to her as a Paria, for fear of exposing her to trouble, I resolved, as a man, to express all the affections she had excited in my soul. To make myself understood, I borrowed, according to the custom of India, the language of the flowers; to the poppies I added marigolds. The next night I found my poppies and marigolds refreshed with water. The night following I became still bolder; joining with the poppies and marigolds a flower of foulsapatte, which is used by shoemakers to stain leather black, as the expression of a humble and unfortunate passion. The next morning, at the dawn of day, I hastened to the grave; but found the flower withered, because it had not been watered. The succeeding night I placed there, with trembling hand, a tulip, whose red leaves and black heart expressed the flames by which I was consumed: the next day I found my tulip in the same state as the foulsapatte. I was overwhelmed with grief; yet the second day afterwards I carried thither a rose-bud with its thorns, as a symbol of my hopes mingled with many fears. But what was my despair when I beheld, by the first glimmering of day, my rose-bud hurled far from the grave! I thought I should have lost my senses. I then resolved to speak to her, let the consequences be what they would. The following night the moment she appeared, I threw myself at her feet, but unable to utter a word, I presented her my rose. 'Unhappy man!' said she, 'thou speakest to me of love, to me who shall soon be no more. After the example of my mother, I must accompany my husband who is just dead, to the funeral pile. He was old; I was married to him when a child. Adieu; retire and forget me: in three days I shall be but a handful of ashes.' She

said, and sighed. Impressed with profound sorrow, I replied: 'Unfortunate Bramin, Nature has burst the bonds which society had imposed upon you; now break yourself those of superstition. This you may do, by accepting me for your husband.'—'What!' exclaimed she, with tears, 'shall I shun death to live with thee in disgrace! Ah! if thou lovest me, let me die!'—'Heaven forbid,' I rejoined, 'that I should extricate you from your misery only to plunge you into mine! Beloved Bramin! let us flee together to the recesses of the forest; it is better to trust ourselves with tigers than with men. But heaven, in which I confide, will not abandon us. Let us go: love, night, thy wretchedness, thy innocence, are all in our favor. Let us hasten, unfortunate widow, thy funeral pile is already preparing, and thy deceased husband summons thee away!' She then fixed her eyes with a sigh on the grave of her mother, then turned them towards heaven, and dropping one of her hands into mine, took my rose with the other. I took her immediately by the arm, and we departed. I threw her veil into the Ganges, to make her relations believe that she had drowned herself. We continued our course several nights along the banks of the river, concealing ourselves by day in the rice-fields. At length we arrived in this country, formerly depopulated by war. I penetrated into the recesses of this wood, where I have built this hut, and planted a little garden, and here we live perfectly happy. I revere my wife as the luminary of day, and I love her as that of night. In this retirement we are every thing to each other; we were despised by the world; but as we mutually esteem each other, the praises which I bestow, or which I receive from her, appear more grateful than the applause of a whole nation." So saying he looked at his infant in his cradle, and at his wife, who was shedding tears of joy.

The doctor wiping his eyes, said to his host: "In truth, what is honored among men, is often deserving of their contempt, and what is despised by them is often worthy

of being honored. But God his just! you are a thousand times more happy in your obscurity, than the chief of the Bramins of Jagernaut in all his glory. He is exposed, like the rest of his cast, to all the revolutions of fortune: on them fall most of the calamities of the civil and foreign wars which have for so many ages desolated your beautiful country; 'tis they who are required to raise forced contributions, on account of the empire they possess over the opinion of the people. But what is still more cruel for them, they are the first victims of their inhuman religion. By preaching up error, they impress it so deeply on their own minds, that they lose the sentiment of truth, justice, humanity, and piety; they are bound in the chains of superstition, with which they endeavour to enthral their countrymen. They are obliged to perform incessant ablutions and purifications, and to abstain from a great number of innocent pleasures. Finally, what cannot be said without horror, in consequence of their barbarous doctrines, they behold their relatives, mothers, sisters, daughters, burned alive. In this manner they are punished by Nature, whose laws they have violated. As for you, you may be sincere, benevolent, just, hospitable, pious; and you escape the strokes of fortune, and the miseries of opinion, by means of your humiliation itself."

After this conversation, the Paria left his guest to take his repose, and retired with his wife taking with him the cradle of his child, into an adjoining room.

At day-break the next morning the doctor was awaked by the singing of the birds, which had built their nests in the branches of the Indian fig tree, and by the voices of the Paria and his wife, who were jointly offering their morning supplication. He rose, and was exceedingly mortified when the Paria and his wife, opening their door to wish him good morning, he perceived that they had no other bed in the hut than the conjugal couch, which they had relinquished to him, and had sat up all night themselves. After they had saluted him, they hastened to

prepare breakfast. Meanwhile he took a turn in the garden; he found that he was surrounded, like the hut with arcades of the Indian fig-tree, so thickly entwined as to form a hedge impervious even to the eye. He only perceived above their foliage the red sides of the rock which flanked the valley all round him; and from which issued a little stream that watered this garden, planted without any kind of order. He observed mangoustans, orange-trees, cocoa-trees, litches, durions, manguirs, jacquiers, bananas, and other vegetables, in fruit or flower, growing promiscuously. Their very trunks were covered; the betel twined itself round the areka-palm, and the pepper climed up the sugar-cane. The air was embalmed with their perfumes. Though most of the trees were still in the shade, the first rays of Aurora began to tinge their tops, around which fluttered innumerable colibris, sparkling like rubies and topazes, while the bengali and the sensasoule, or the bird with five hundred voices, executed their melodious concerts on their nests. The doctor was walking beneath these charming shades, free from learned and ambitious thoughts, when the Paria came to invite him to breakfast. "Your garden is delightful," said the Englishman, "the only fault I find with it is, that it is too small. Were I in your place I would add a green to it, and extend it into the forest." "Sir," replied the Paria, "the less space we occupy, the more secure we are: a leaf is sufficient for the nest of the humming-bird." They entered the hut, where they found the Paria's wife in a corner, suckling her child. After a silent repast, the doctor was preparing to depart, when the Indian said to him: "My guest, the country is still inundated with the rain of the night, the roads are impassable; stay this day with us." "I cannot," said the doctor, "I have too many people with me." "I see," rejoined the Paria, "that you are in haste to quit the country of the Bramins, and to return to that of the Christians, whose religion teaches all men to live like brethren." The doctor rose, sighing; on which the Paria made a sign to his wife, who, with down-

cast eyes, silently presented to the doctor a basket filled with flowers and fruits. The Paria then addressed the Englishman in these terms:

"Excuse our poverty, Sir: we have neither ambergris nor the wood of aloes with which to perfume our guests, according to the custom of India; but I hope you will not despise this little basket, filled by the hand of my wife. There are in it neither poppies nor marigolds, but jasmin, mougris, and bergamotte, which, by their perfumes, are emblems of our affection, the remembrance of which will remain when we shall see you no more." The doctor took the basket and said to the Paria: "I cannot make a sufficient acknowledgment for your hospitality, or testify all the esteem I feel for you. Accept this gold watch; it is the work of the most celebrated watchmaker in London." "We have no occasion for a watch, sir," answered the Paria; "we have one which never stands still, and is never out of order; I mean the sun." "My watch strikes the hours," added the doctor. "Our birds sing them," rejoined the Paria." "At least," said the doctor, "accept these strings of beads, to make necklaces for your wife and child." "My wife and child," answered the Indian, "will never want red necklaces as long as our garden produces Angola peas." "Then take these pistols," said the doctor, "to defend yourselves against robbers in your solitude." "Poverty," said the Paria, "is a rampart which protects us from robbers; the very silver which decorates your pistols would be sufficient to attract them hither. In the name of God who protects us, and from whom we expect our reward, deprive us not of the recompence for our hospitality!" "And yet," replied the Englishman, "I should wish you to have some token of remembrance." "Well, my honoured guest," replied the Paria, "since you desire it, I will take the liberty to propose an exchange; give me your pipe, and take mine. When I smoke in yours I shall call to mind that an European Pandect once deigned to accept the hospitality of a poor Paria." The doctor immediately presented to him his pipe of Eng-

lish leather, with a mouth-piece of yellow amber, and receive in return that of the Paria, made of boo, with a bowl of baked earth.

He then called his attendants, who were in a deplorable condition after such a dismal night, and having embraced the Parta, he stepped into his palanquin. The Paria's wife, who could not restrain her tears, remained at the door of the hut, with her child in her arms; but her husband accompanied the doctor to the extremity of the wood, loading him with benedictions. "May God reward you," said he, "for your goodness towards the unfortunate! May he conduct you in safety to England, that land of learning and of friendship, whose children seek the truth over the whole world, for the happiness of mankind!" "I have traversed half the globe," replied the doctor, "and have met with nothing but error and discord: I have found truth and happiness no where but in your cottage." At these words they parted with mutual tears. The doctor was already at a great distance, when he still saw the virtuous Paria at the foot of a tree, making signs with his hands to bid him adieu.

The doctor, on his return to Calcutta, embarked for Chadernagoer, whence he set sail for England. On his arrival in London, he delivered the ninety bales of manuscripts to the president of the Royal Society, who deposited them in the British Museum, where the literati and journalists are still engaged in translating, praising, abusing and criticising them. As for the doctor, he kept to himself the Paria's three answers on truth. He often smoked in his pipe, and when he was asked what was the most useful information he had acquired in his travels, he would reply: "Truth should be sought with a simple heart; it is to be found only in Nature, and should be communicated only to the good." To this he would add: "Happiness is to be found no where but in the company of a good wife."

THE END.

STUDIES OF NATURE.

INTRODUCTION.

THE first edition of this work, which appeared in December 1784, was nearly sold off before the conclusion of the following year. Since its publication I have been abundantly gratified by the honorable testimonies of friendship bestowed on me by persons of both sexes and of all ranks, with most of whom I am not acquainted. Some have visited me, and others have sent me the most affecting letters to thank me for my work, as if, by its publication, I had conferred on them an extraordinary favor. Many of them invited me to their country seats to enjoy those rural scenes which, according to their expression, I was so passionately fond. Yes, indeed, I should dearly love a country residence, but it must be after my own mind and not after that of another. I returned the best answer I could to these flattering offers, of which I accepted nothing but the good-will. Benevolence is the flower of friendship; its perfume lasts as long as it is left on the stem without being plucked. An unfortunate father of a family informed me that my Studies were his sweetest consolation. An Atheist came several times from a remote country town to see me; struck, as he told me, with admiration of the harmonies I had pointed out in the plants, and whose existence he had recognized in nature. People of importance, and others who imagine themselves such, have given me invitations to their mansions, at the same time holding out flattering hopes of fortune; but whenever I can enjoy the rare felicity of being beloved, and what is of still greater importance with me, the power of being useful, so long I flee if I can, from the

misfortune so common and humiliating, that of being protected. I have not said this from vanity, but as the best acknowledgment which I never fail to make for the slightest marks of good-will that are shewn me, when I believe them to be sincere.

From these suffrages of persons of character I have reason to think that God has blessed my labors, notwithstanding all their imperfections. It is my duty to render them as worthy of the public esteem as I can. I have therefore corrected, in this new edition, the errors of the press, the blemishes of style, and the obscurities in point of meaning, which I remarked in the former; and this I have done by myself or with the assistance of well informed friends, without, however, retrenching any thing material, in conformity with their desires. I have only taken the liberty, for the sake of perspicuity, to make some tranpositions in the notes; in which view I have added some others.

I should have been happy to derive advantage from the candid opinions of the literary journalists concerning this work. They have been left in this respect entirely to their own discretion, for I have neither by myself or others solicited approbation; but they have confined themselves to observations of no essential importance. That journal which embraces the greatest variety of subjects, and which from the great talents of those who conduct it, appeared the most likely to instruct me, finds fault with me for having asserted: that animals are not exposed by nature, to perish by famine like man, objecting to me the case of the partridges and hares in the vicinity of Paris, which sometimes die of hunger during the winter. But as, on the one hand, those animals are multiplied without end in the neighbourhood of Paris, and as, in the other, every thing, even to the smallest blade of grass is cut down, it must necessarily happen that they sometimes perish with hunger, especially if the winter is longer than usual. The famine, therefore, which they endure in our fields, proceeds from the inconsiderateness of man, and not from the improvidence of nature. Partridges and hares never die of hunger in the forests of the north, where the winter lasts for six months·

they know how to find, under the snow, the herbage and the fir-apples of the preceding year, which Nature has there concealed for a seasonable supply.

The other objections raised by the journalists are neither more important nor better founded. Most of them have treated as a paradox the cause of the currents, and of the flux and reflux of the sea, which I attribute to the alternate fusion of the polar ices, which in winter are five or six thousand leagues in circumference in each hemisphere, and in summer are not more than two or three thousand. But as not a single one of them has produced a single argument against the principles of my theory, nor against the facts on which I have grounded them, nor the consequences I have deduced from them, I have nothing to reply, unless that, on this head, they have pronounced a decision without having examined into the merits of the cause; which, though an expeditious method, is not a perfectly equitable one. He who has the greatest encouragement, and who doubtless deserves it by the taste which he displays in his daily accounts of literary productions, has objected, that I destroy the action of the moon which so completely agrees with the phenomena of the tides. It is easy to perceive that he has not taken the trouble to inform himself either respecting my new theory or the old one. I never attempt to destroy the moon's action on the seas, but instead of making her act on the fluid seas of the equator by an astronomical attraction, which produces not the least effect on the Mediterranean seas, and the lakes of the torrid zone itself, I make her act on the frozen oceans of the poles, by the reflected heat of the sun, acknowledged by the ancients,* demonstrated by the moderns, and of which every man may experimentally convince himself with a glass of water.

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* "The moon produces thaw, dissolving ice and frost by the humidity of her influence." Pliny's Natural History, Book II. Chap. 110. When, in the winter nights, the moon shines in all her lustre, it doubtless freezes very sharply; because, at such times the north wind, which causes this serenity of the air, checks the warm influence of the moon; but if the wind falls ever so little, you see the sky covered with vapors which exhale from the earth, and you feel the atmosphere become milder. Like Pliny, I ascribe to the influence

Besides it is far from being true, that the phases of the moon, are over the whole earth, in harmony with the movements of the sea. The flux and reflux of the sea, on our coasts, follow rather the mean than the real motion of the moon. In other places they are subject to other laws which obliged Newton himself to acknowledge, "that there must be, in the periodical returns of the tides, some other mixed cause, hitherto undiscovered."* The explanation of these phenomena which bid defiance to the astronomical system, perfectly accords with my natural theory, which ascribes to the alternate heat of the sun, both direct and reflected by the moon on the ices of the two poles, the cause, the variety, and the constant return of the tides, and especially of the general and alternate currents of the ocean which are the primary moving principles of the latter. Our astronomers, notwithstanding, have never attempted to assign any cause for the half-yearly alteration of those general currents so well known in the Indian ocean; nay, they even appear to have been hitherto ignorant that similar currents existed in the Atlantic. This is a fact which can no longer be doubted after the new proofs which I exhibit in the course of this work.

I have, then, advanced no paradox respecting causes so

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of that luminary, a particular action on the frozen waters of the earth and of the air; for, in the fine nights of the torrid zone, I have often seen all the clouds of the atmosphere dispersed as they rose, which suggested the proverb common among sailors: "The moon is eating up the clouds." For the rest our naturalists contradict themselves, in supposing that the moon moves the ocean, while they refuse her any kind of influence not only on ice, but on plants, because, say they, her heat does not cause the fluid to ascend in their thermometers. I do not know, in fact, whether it does not act on spirit of wine; but what conclusion can hence be deduced? Would the igneous particles contained in pepper, cloves, pimento, caustics, &c. which have such a powerful action on the fluids of the human body, communicate the slightest tendency to ascend, to spirit of wine in which you were to infuse them? Fire, as well as the other elements, is subject to combinations which augment its action in one affinity, and reduce it to nothing in another. We must not, then, pretend with our philosophical instruments to arrive at the capability of determining the effects of natural causes.

* Newton's Philosophy, Chap. XXV.

evident; but I have opposed to an astronomical system destitute of physical proof, authentic facts, deduced from all the kingdoms of Nature: facts which correspond in a multitude of particulars relative to the flux and reflux of all rivers and lakes which are fed by mountains of ice, and which I could multiply and exhibit in new lights if there were occasion and my health would permit.

A journal which, from its title, seems intended to inform all Europe, as well as that which would be thought exclusively devoted to the use of the learned, have maintained a profound silence, not only with regard to natural truths of such novelty and importance, but even concerning my whole work. Others have opposed to me, as a complete refutation, the authority of Newton, who did not think as I do. I highly respect Newton for his genius and his virtues, but I respect truth much more. The authority of great names but too frequently serves as a strong-hold for error: it is thus, that, on the faith of a Maupertius and a La Condamine, Europe has hitherto believed that the earth is flattened at the poles. From their own operations I demonstrate that it is lengthened out at that part. What answer can be given to the geometrical demonstration I produce? For my part, I am confident that Newton himself, were he now living, would renounce this erroneous opinion, though to tell the truth, he was the first that broached it.

The reader will undoubtedly be very much surprised to see men of such celebrity falling into a contradiction so extraordinary, a contradiction afterwards adopted and taught in all the seminaries of Europe, while no one perceived it, or possessed the courage to assert the truth. I was so astonished at it myself, that I imagined for a long time that I, not they, had lost on this subject, the sentiment of evidence. I dared not even disclose to any person my thoughts on this head, any more than on the other objects of these Studies: for I have scarcely met in the world any but men sold to the systems which have led to fortune, or to those which promise it. Accordingly, the more I was in the right, being alone and without encomiasts, the more erroneous they would consider my opinion. Besides, how

is it possible to reason with people who shroud themselves in clouds of equations and metaphysical distinctions, if you press them ever so little by the sentiment of truth? When these refuges fail they overwhelm you with the innumerable authorities by which they have themselves been subjugated, without a shadow of reason, and by which they hope to subdue in their turn, the man in particular who belongs to no party. What then should I have done in this crowd of vain and intolerant men, to each of whom an European education has from the tenderest infancy whispered: "Be the first;" and among so many doctors titled and without titles, who have appropriated to themselves the right of freedom of speech, unless it were to shut myself up, as I frequently do, in my freedom of silence?* If I there speak it is of few things, or of things of little importance.

In the solitary and unconstrained paths, however, in which I sought Truth, I recovered my confidence with the new rays of her light, when I recollected, that the most celebrated scholars in all ages had been as much blinded by their own errors as the illiterate by those of others. To demonstrate the inconsistency of modern astronomers, nothing farther was required, than to employ some principles of geometry which are within the reach of my capacity and that of all mankind. Accordingly, convinced by a multitude of observations meteorological, nautical, vegetable and

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* A man is not permitted to remain long in possession of his right of silence; for those who speak wish to have no hearers but such as are disposed to applaud.

I have remarked that the degree of attention paid by the world to its orators is always in proportion to the degree of power or of malignity which it supposes them to possess. B Truth, reason, and understanding, in this case, pass for nothing. To make the world listen to you, you must make yourself feared: accordingly, those who shine in it, frequently employ turns of phrascology which give you to understand that they are powerful friends or dangerous enemies. Every plain, modest, sincere, good man is therefore reduced to silence; this he may break when he pleases, if he will flatter tyrants; but in me this method would produce a very contrary effect, for I can flatter only what I love.

Flee from the world, then, ye who will neither flatter nor malign: for you would lose in it at once, the good you expected from it, and that which belongs to your own consciences.

animal, that the waters of the polar ices were naturally impelled towards the equator, and vexed at being contradicted by the two celebrated operations of our geometricians, I had the courage to examine the results, and I am convinced that they ought to be the same as my own. In my first edition I presented to the public both the one and the other: theirs remain without a defence, and mine unimpeached, though without any declared partisans. In this new edition I have reduced the demonstration of their error to geometrical evidence, and now await a decision from the conscience of every reader.

It is by the prejudices of education that our astronomers have been thus misled: those prejudices, which, from infancy attach us, without reflection, to accredited errors that lead to fortune, and cause us to reject solitary truths that lead to none. They have been seduced by the reputation of Newton, which is objected to myself; and Newton had himself been misled, as usually happens, by his own system. That sublime geometrician supposed that the centrifugal force, which he applied to the motion of the stars, had flattened the poles of the earth, by acting upon its equator. Norwood, an English mathematician, having found, by measuring the meridian from London to York, the terrestrial degree to exceed by eight fathoms that which Cassini had measured in France. "Newton," says Voltaire, "ascribed this small excess of eight fathoms in a degree to the figure of the earth, which he believed to be that of a spheroid, flattened towards the poles; and he concluded that Norwood, by taking his meridian in a region more northward than ours, could not but find his degrees greater than those of Cassini, because he supposed the curve of the earth measured by Norwood to be longer.* It is evident that these degrees being greater, and this curve longer towards the north, Newton ought to have concluded that the earth was lengthened out at the poles; but if, on the contrary, he inferred that it was flattened, it was be-

* Newton's Philosophy, chap. xviii.

cause his system of the heavens occupied all the faculties of his vast genius, and prevented his detecting on the earth a geometrical inconsistency. He therefore adopted, without examination, an experiment which he thought favorable to his system, without perceiving that it was diametrically opposite to it. Our philosophers have suffered themselves to be alternately misled by the reputation of Newton, and by the weakness so natural to the human mind, of seeking to explain all the operations of nature by a single law. Even Bouguer, one of their co-operators, in his Treatise on Navigation, book v chap. v. sect. 2. p. 435, positively says, "that on this discovery of the flattening of the poles, almost the whole system of natural philosophy depends."

Our astronomers, then, have set out on a ramble to the extremities of the earth, in quest of physical proof of a celestial system, happy and luminous, with which they were so dazzled before hand, that they mistook, in their turn, truth itself, which, remote from the prejudices of Europe, repaired to deserts to put itself in their power. If the most celebrated of modern geometricians could fall into so great an error in his own science, and if astronomers, in other respects men distinguished for sagacity, have, in consequence of the mere influence of his name, drawn from their own operations false conclusions in support of that error; rejected the preceding experiments of their academy on the sinking of the barometor in the north with the other geographical observations which contradicted it; established upon it the base of all future physical knowledge, and afterwards gave it, by their own reputation, an authority, which has not left to the rest of the learned the liberty of doubting; it behoves us, obscure and ignorant men, who seek truth only for the happiness of knowing it, to be upon our guard. Let us then, in our researches, mistrust all human authority, like Descartes, who, only by doubting, dissipated the philosophy of the age, which had so long concealed from all Europe the laws of nature, by means of the prejudice of the name of Aristotle, then held sacred in every university: and let us assume for a maxim, that which led Newton himself to so many real discoveries, and likewise the Royal Society of London, who have taken it for a motto: NULLUS IN VERBA.

To return to the journals; if they have, as it were in concert, refused their approbation to the natural subjects of these studies, one of them, I am told, has advanced, that I borrowed my theory of the tides by means of the polar ices, from Latin authors. This theory, at last, seems to be gaining partizans, since it excites envy.

To that imputation this is my answer. If I had known any Latin author who attributed the tides to the fusion of the polar ices, I would have named him—a piece of justice which the nature of my work and every principle of my conscience would have commanded of me. I have not had, like many philosophers, the vanity to model at my ease, a world according to my own fancy: but I have endeavored with much labor to collect the several pieces of the plan of that in which we live, scattered among the men of all nations and of all ages who have observed it with the greatest care. I have, accordingly, taken my ideas of the elongation of the earth at the poles, from Childrey, Kepler, Tycho-Brahe, Cassini, and above all, from the operations of our modern astronomers; of the extent of the icy oceans, which cover the poles, from Denis, Barentz, Cook, and all the navigators of high northern or southern latitudes; of the ancient deviation of the sun from the ecliptic, from the Egyptian traditions, the Chinese annals, and even from the mythology of the Greeks; of the total fusion of the polar ices, and the general deluge which succeeded, from Moses and Job; of the heat of the moon, and its effects on ice and water, from Pliny, and the modern experiments made at Rome and Paris; of the currents and tides, which flow alternately from the poles towards the equator, from Christopher Columbus, Barentz, Martens, Ellis, Linschoten, Abel Tasman, Dampier, Pennant, Rennefort, &c. All these observers I have quoted in terms of deserved approbation. If I had known any Latin author who had ascribed to the melting of the polar ices, the tides of only some particular part of the ocean, I would, in like manner, have quoted him, reserving to myself the glory of the architect, that of combining all these detached observations, of allotting to them their peculiar seasons and latitudes in order to clear them of the apparent contradictions that had hitherto prevented

the deduction of any conclusion from them; and, finally, of assigning a cause and evident means for effects, which, during so many ages, were involved in mystery. Of all these sacred truths I have formed a whole, and have deduced from them the general harmony of the movements of the ocean, of which the heat of the sun is the first *cause;* the polar ices are the *means*, and the half-yearly alternate currents of the seas, with daily tides on our shores are the *effects.** If, therefore, others have affirmed before me, that the tides proceed from the fusion of the polar ices, which I am ignorant that any one ever did, I am at least the first who demonstrated this position. Other Europeans said before Christopher Columbus, that there was another world, but he was the first who discovered it. If others had, in like manner, asserted, that the tides have their origin at the poles, nobody believed them, because they adduced no proofs of their assertion. Before it was possible for me to collect mine, I was obliged to dissipate the thick clouds of venerable errors, such as that of the poles flattened and washed by sea free from ice, which our pretended sciences had spread between truth and us, and which were sufficient to involve all our natural philosophy in eternal night.

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* Many persons will find it difficult to conceive how our tides can in summer re ascend towards the north pole, at the very season when the current which produces them descends from that pole. They may see a very striking example of the retrograde effects of running waters, at the bridge of Notre Dame, at the opening of the arch which is supported by the Quay Pelletier. The current of the Seine, directed obliquely by a kind of dam against a pile of that arch, these produces a counter current, which constantly ascends against the course of the river to the very bubbling ever of the dam. In the same manner, the waters of the northern ices descend in summer into the bays adjacent to the polar circle. at the rate of eight or ten leagues an hour, according to Ellis, Linschoten and Barentz: they proceed southward, in the middle of the Atlantic Ocean, but meeting, almost in front with the shores of Africa and America, which project on both sides, they are obliged to return to the right and left along those continents, and to re-ascend towards the north, above the capes Bojador and St. Augustine, which are rendered famous by their currents. Now as the sources whence they issue have an intermittent flux of acceleration and retardation, occasioned by the diurnal and nocturnal action of the sun on the ices, of the eastern and western hemisphere of the pole, their lateral counter currents, that is their tides, have likewise a similar intermittent flux.

The glory, therefore, at which I aspired, was that of assembling some of the harmonies of Nature, to form a concert, that should elevate man towards his author, or rather I have aimed only at the felicity of knowing them myself and of making them known to my fellow-creatures; for I am ready to adopt any other system which shall present to the understanding a higher degree of probability, and to the heart more cheering consolation. To God alone belongs the glory, and to men peace, which is never so pure and so profound, as in the feelings of that very glory which governs the universe. The highest object of my ambition has been to discover some new rays of it, and henceforward my only wish is to be illumined by them during the remainder of my life; avoiding as much as possible that vain, imperfect, and inconstant glory, which the world gives and takes away at pleasure.

I have been rather diffuse on the right I possess to the discovery of the cause of the currents and the tides from the melting of the polar ices, because, having opposed to most of the received opinions, many observations which I challenge as my own, if each of them required a manifesto to defend my property in it, I should never be able to accomplish the task. Besides, if they shall acquire so much celebrity, as to procure me, according to the spirit of the age, perfidious praises, underhand persecutions, false commiseration, calcutated to blast my uncertain, tardy and scarcely budding fortunes; I solemnly declare, that, belonging to no party, and able to oppose none but myself to any new enemy, instead of filling the public prints, according to custom, with recriminations, abuse, complaint, lamentations and the waste of time, I shall defend myself only on my own ground; and shall oppose to my enemies whether secret or avowed, nothing but Truth. Her mirror shall be my Ægis, and their own image reflected in it shall be to each the head of Medusa. Or rather may I, far from inconstant and treacherous man, beneath a small rustic cot of my own, on the border of a wood, disengage the statue of my Minerva from the trunk of her own tree, and at length place a whole globe at her feet!

For the rest, if the journalists have refused me their applause for objects of such importance to the progress of the science of nature, and if others have got the start of me to deprive me of that of the public, I can already boast the suffrages of illustrious names among all conditions of men.

I cannot forbear congratulating myself on the general interest with which the public has received the moral part of this work. I have, however, left untouched many great objects of moral and political reform; some, because it was not permitted me to treat them in the manner my conscience directed, and others because they were not embraced by my plan. I have confined myself merely to the abuses which it was in the power of the government to correct.

If I have been sometimes diffuse on the disorders and the intolerance of associations, I have respected states; I have attacked particular bodies of men in the view of defending my country, and, especially, to support humanity, of which corps we are all members. But God forbid that I should wish to give pain to any individual of sensibility—I, who have taken up the pen only to practise the principle of the motto which I have prefixed to this work: *Miseris succurrere disco*—the experience of misery has taught me to succour the miserable. Reader, whatever station you may occupy in the world, I shall be satisfied with your decision, if you judge me as a man, in a work in which I have studied only the happiness of mankind. If, on the other hand, I have attained the glory of communicating to you some new pleasures, and of extending your views into the unbounded and mysterious field of Nature, think that these are only the perceptions of a man; that they are nothing in comparison with what really exists; that they are only shadows of eternal truth, collected by another shadow, and that it is only a very small ray of the sun of intelligence, which fills the Universe, that has been playing in a drop of troubled water.

I fell into an error in stating that astronomers contradicted each other, when I made them say, on the one hand, that most of the degrees of the meridian were greater the

those of the equator to the poles; and on the other, that the meridian was smaller than the equator, because they suppose the earth to be flattened at the two poles.

My error, like most mistakes that are committed, was in setting out. Astronomers do not say that most of the degrees of the meridian are greater than those of the equator. They, in the first place, take it for granted, that the first degree of the meridian is much smaller than a degree of the equator. They then say, that the succeeding degrees of the meridian continue to increase till the fifty-fifth, which is equal to a degree of the equator, or of the sphere. The thirty-five remaining degrees increase to the poles, and these only are larger than those of the equator or of the sphere; so that the fifty-four smaller degrees, and the thirty-five larger being balanced the result is, that the meridian is smaller than the equator, or than a circle of the sphere. Astronomers, therefore, are not guilty of any contradiction when they say, that the meridian is comprised in the sphere, or, which is synonimous, that the earth is flat at the poles.

Such is the explanation transmitted to me by an astronomer equally distinguished for his perspicuity and politeness, and whose name I should have mentioned, had I been permitted.

Into this error I was led by the obscure expressions of astronomers, and by the positive assertion of father Regnault, who supposed after Cassini that the degrees of the meridian increase as they proceed towards the poles, "so that," says he, "the circumference of a meridian of the earth must exceed the circumference of its equator by about fifty leagues;" whence he concludes with Cassini that the earth is elongated at the poles.

It is not a little singular that Cassini, in the volume of the academy quoted by father Regnault, supposes, on the contrary, that the degrees diminish as they approach the poles. He afterwards renounced both his principle and his conclusion, in conformity with the modern academicians.

It should appear that the simplest truths are always the

most difficult to be comprehended. In every art or science the elements are always ready to escape us. Fontenelle, who, it must be admitted, possessed geometrical sagacity, deduced a consequence contrary to that of Cassini and similar to mine. The academicians of his time found that the degrees of the meridian diminished as they approached the north pole; and he thence concluded, that the earth was flattened. The modern academicians have discovered that the degrees increase as they advance to the pole, from which I conclude that it elongated at that part.

Fontenelle indeed retracted his opinion in consequence of a memoir transmitted to him by Albauzit, a friend of Newton; for my part, though I acknowledge that the modern academicians have not contradicted themselves, I still find it impossible to form the same conclusion as they. It is sufficient for me to know that the thirty-five degrees of the meridian, beginning with the fifty-fifth degree, are larger than those of the sphere, in order to conclude, that the earth is not flat at the poles; my objection applies with as much force to a segment of the meridian as to the whole meridian. The polar curve of thirty-five degrees is greater than an arc of the sphere of thirty-five degrees, since it is supported on the same chord and its degrees are greater. The polar curve, therefore, projects from its spherical arc, and the earth is elongated at the pole.

With regard to the fifty-four degrees of the meridian which are smaller than those of the sphere, they are of no use to me. I do not, however, admit, that the first degree of the meridian is smaller than a degree of the equator, at the point where those two circles intersect each other. I shall in another place state the geometrical reasons of this opinion, in such a manner, I hope, as to merit the esteem of the scholars who have sought to enlighten me.

As to physical reasons, I have a great number, which it is my intention to annex to those by which I demonstrate the half-yearly circulation of the seas and the semi-diurnal recurrence of the tides, by the half-yearly and half-daily melting of the polar ices. Though it might seem impossi-

to add any thing to these, yet I have several others of

different kinds which are not less convincing. To enable the reader to form some idea of them, I shall only introduce the following.

It is well known by all those who inhabit the sea-coasts, that the winters are there milder and the summers cooler than in the interior of the country. On the coast of Normandy, I have seen the fig-trees exposed during the winter to the open air, while at the same season it is necessary to protect those of Paris from its rigors, though that city lies in a more southern latitude. On the contrary, in summer the figs ripen later and fruits of all kinds are more backward on the coasts of Normandy than at Paris. It is the mildness of the winter in England which embellishes it charming plains with perpetual verdure. The coolness o. the summer likewise contributes to produce the same effect; but on the other hand, it prevents the grapes and other fruits from attaining to perfect maturity, though they arrive at perfection in the same latitudes in the interior of France.

Philosophers have attributed the warmth of the winters and the coolness of the summers on the sea coast to the vapors from the water. But what has escaped their observation, and yet is not a little remarkable is, that these effects take place only on the coasts of the Atlantic. The winter is very severe on the coasts of the Baltic, of which the whole, or at least a great portion, is annually frozen; the same is the case with the lakes of Lapland. Yet the Atlantic Ocean never freezes on the Norwegian coasts, though situated under the same latitudes. Farther, the Atlantic ocean is, from the quality of its waters, colder than the Baltic, for it is salt, which the Baltic is not. Salt is naturally very cold; for this reason it is employed in summer in making ice. Why then, should the Atlantic ocean, though salt, be warmer in winter than the Baltic sea, which freezes in the same latitudes, and the waters of which are fresh, unless where they join the Atlantic, where, indeed, they are somewhat salt, but where it never freezes? On the other hand, why is it colder in summer on the shores of the Atlantic than on those of the Baltic and on the continent, as is evinced by the examples I have mentioned and like-

wise by the Orkneys and Iceland, where the harvests rarely arrive at maturity though the winters are very temperate, whereas abundant crops are obtained at Stockholm, at Petersburg and in still more northern continental latitudes where the winter is extremely severe?

To resolve this two-fold problem of the warmth of the waters of the Atlantic in winter and their coolness in summer, and of the qualities resulting, by means of its atmosphere, to the temperature of its shores, it is necessary to have recourse to the principle I have laid down, that the ocean descends alternately from the two elongated poles of the globe. In our winter the fluid ocean descends from the frozen seas of the south pole, at that time four or five thousand leagues in circumference, by the action of the sun, which melts the ice from the equinox of September to that of March. These southern fluxes descend towards the line, carrying along with them, round the whole circumference of the south pole, masses of ice, which sometimes reach the forty-second degree of latitude, where they have been seen from two to three hundred feet in height. These abundant meltings impel the waters of the torrid zone towards the north. These torrid waters, notwithstanding their saltness, heated between the tropics by the perpetual action of the sun, ascend very far towards the north, warming, on their way, the shores which they bathe and the atmosphere by which they are surrounded. Those which proceed in the channel of the Atlantic, advance to the sixty-fifth degree, where the tides cease during our winter. A few degrees higher, the vapours exhaling from them are incessantly converted into congelations on the sides of the north pole, and there prepare the vast masses of ice which are to descend from it in the spring Thus the heat of the Atlantic ocean in the torrid zone, is the cause in winter of the warmth of the same ocean in the temperate zone, and of the solidity of the ice in the frozen zone. On the contrary, in summer, this frozen ocean of the north pole, being melted by the return of the sun from the March equinox to that of September, its waters carry with them floating islands of ice from twelve to fifteen hundred feet in height and two or three

days' sail in extent, down to the fifty-second degree. By their frigid waters and their foggy atmosphere they incessantly cool the islands and shores of the Atlantic, and sometimes occasion, even on the continent, very cold days in the middle of July. Thus the cold of the icy ocean whence issues the Atlantic, is the cause in summer of the coldness of that ocean in the temperate zone, and of its cool temperature in the torrid zone, which in that season is visited with rains and tempests that refresh the burning shores of Africa and America.

These various temperatures of the Atlantic ocean are confirmed by a remarkable experiment mentioned by Mr. Pennant in his Outlines of the Globe, vol. i. p. 353. He says that, in the month of April, in latitude 38° North, longitude 76° West of Greenwich, Sir Charles Blagden found, by experiment, that the heat of the current coming from the gulf of Mexico was six degrees higher than that of the sea-water out of the current. The Atlantic Ocean, which was beginning to descend from the North pole, partook of the coldness of its ices, whereas the current from Mexico was ascending from the south to the north, by the action of the general current which produces the tides by means of the re-action of its lateral counter-currents.

By this grand law of the alternate fusion of the ices of the north and south poles, we may resolve a multitude of problems relative to the different temperatures of countries situated under the same latitude, and explain, for example, why the winters are colder and the summers less warm on the shores of Canada, than on those of France: why the Antilles are cooler, both in summer and winter, than the islands of the Indian ocean under the same parallels; as might otherwise be conjectured from the colour of their inhabitants and the different qualities of their vegetable productions. This variety of temperature proceeds solely from the difference in the temperature of their seas. If the earth has particular causes of cold, in the elevation of its soil and its ice-clad mountains, and causes of heat in its sandy zones and its volcanoes; the sea likewise has its causes in its cold currents and its floating masses of ice descending from the

poles, and in its hot currents proceeding from the torrid zone: the former are fixed, the latter are variable, but far more powerful in their effects, because their influence over the atmosphere is much more extensive. It is the history of the sea, which must furnish that of the land. The sea has given to the earth its sands, its calcareous stones, its marble, its strata of various kinds of clay, its bays, its capes and most of its islands. The sea likewise gives to the earth its temperatures, its clouds, its winds, its snows, its rains, its ice, its lakes, its rivers; and consequently the primary causes of its vegetation, its navigation, its fisheries and its commerce. These phenonomena, these meteors, all these harmonies so constant and so various, depend solely on the alternate fusion of the two icy oceans, which cover the poles, and which could not descend if the poles were flattened. I have just adduced a new proof, which explains the reason why the winter is milder and the summer colder on the sea-coast than in the interior of the continent. I have in store others that are not less interesting. These I hope to add to the former, if God should grant me leisure and grace. I shall likewise embellish with a few flowers the cradle of this nascent truth, exposed at the doors of our academies and repulsed by them, but which, hailed by cultivators, voyagers and fishermen, and favored by Heaven, will one day rise upon the ruins of scientific systems, and will preside over the globe for the Study of Nature.

STUDIES OF NATURE.

STUDY I.

IMMENSITY OF NATURE.

PLAN OF THE WORK.

I FORMED, some years ago, the design of writing a general history of nature after the example of Aristotle, Pliny, Chancellor Bacon and many celebrated moderns. This field appeared so vast, that I could not think that it had been entirely explored. Besides, Nature invites thither men in every age, and if she promises discoveries only to men of genius, she at least reserves some gleanings for the ignorant, especially for such, who, like me, stop at every step, transported with the beauty of her divine works. To this noble design I was still farther induced by the desire of being serviceable to my fellow-creatures. It is in Nature herself that we must seek her laws, it is only when we deviate from them that we encounter calamities. To study nature is, therefore, to serve the human race. In this research I have employed the whole strength of my reason, and though my means were very feeble, yet I can assert that I never passed a single day without collecting some agreeable observation. I purposed to begin my work when I had ceased to observe and had collected all

the materials for a history of Nature, but I was like the child who with a shell dug a hole in the sand to receive the waters of the ocean.

Nature is infinitely extended and my powers are extremely limited. Not only the general history of nature, but even that of the smallest plant is far beyond my ability. Of this I was convinced by the following circumstance.

One summer's day, being engaged in regulating some observations on the harmonies of the globe, I perceived on a strawberry plant which happened to be placed in my window, some small flies of such beauty that I resolved to describe them. The following day I perceived another kind, which I likewise described. In the space of three weeks I observed thirty seven different species; but, at length, they came in such numbers, and of such various kinds, that I desisted from this study, though very amusing, for want of leisure, and, to tell the truth, for want of expressions.

The flies which I had observed were all distinguished from each other by their colors, their forms and their manners. Some were of the color of gold, others of silver, and others of bronze: these were spotted, those striped; some were blue, some green, some dull and others shining. In some the head was rounded like a turban, in others lengthened into a point like a nail: in some it appeared dark like a spot of black velvet, in others it sparkled like a ruby. In their wings there was as great a variety Some had long ones which glistened like mother of pearl; those of others were short and broad and resembled net work of the finest gauze. Each had a peculiar position and manner of employing them. Some carried them in a perpendicular, others in a horizontal attitude, and seemed to take a pleasure in extending them. These fluttered in the manner of butterflies; those raised themselves in the air against the wind by a mechanism nearly similar to that of paper kites, which, as they rise, form with the wind an angle of I believe twenty-two degrees

and a half. Some settled on the plant to deposit their eggs, and others merely to take shelter from the sun; but most came for reasons that were wholly unknown to me. Some alighted and flew off again in a perpetual motion, while others moved only the hinder part of their bodies. Many of them were motionless and perhaps engaged, like myself, in making observations. I sighted as sufficiently known all the other species of insects which resorted to my strawberry, such as the snails which fixed themselves beneath its leaves, the butterflies that hovered over it, the scarabei which burrowed about its roots, the minute worms which found a subsistence in the thickness of its leaf, the wasps and the bees which buzzed around its flowers, the grubs which devoured its stalks, the ants which destroyed the grubs, and lastly the spiders, which spread their nets to make a prey of all these different kinds of insects.

Though these objects were so diminutive, yet they were not beneath my notice, since they had deserved the attention of Nature. I could not have refused them a place in the general history of her works, as she had given them one in the universe. Still more necessary would it have been, to take account of them, if I had written the history of my strawberry. The plants are the habitations of insects, and we seldom write the history of a town without treating of its inhabitants. Besides, my strawberry was not in its natural situation, on the border of a wood or the bank of a stream, where it would have been frequented by many other species of animals. It was in a flower-pot, in the midst of the smoke of Paris. I observed it only in moments of leisure. I knew not by what insects it might be visited in the course of the day, and still less those that might frequent it in the night, attracted merely by its exhalations, or perhaps by phosphoric lights that escape our observation. I was ignorant of those that might repair to it during the other seasons of the year, and of its other relations with reptiles, amphi-

bious animals, fishes, birds, quadrupeds, and particularly with man, who disregards every thing that is not for his own use.

But it was not sufficient for me to observe it, as it were, from the height of my greatness, for in that case, my knowledge would not have equalled that of one of the flies by which it was inhabited. There was not one of them which, with its little spherical eyes, could not distinguish upon it a multitude of objects that I was unable to perceive except with the microscope, and with infinite trouble. Their eyes are even far superior to that instrument which only shews us the objects within its focus, that is, within the distance of a few lines; whereas, by a mechanism wholly unknown to us, they perceive both those that are near and at a distance. They are at one and the same time microscopes and telescopes. By their circular disposition round the head they see at once the whole expanse of heaven, of which those of an astronomer can embrace, at most, only one half. Thus these flies must have discovered at one view in my strawberry, a distribution and combination of parts, which, with a microscope, I could observe only separately and in succession.

In examining the leaves of this vegetable by means of a lens that magnified in a moderate degree, I found them divided by compartments covered with hair, separated by canals, and interspersed with glands. These compartments appeared like large verdant carpets, and their hairs seemed to resemble vegetables of a particular order, some of which were straight, others inclined, forked, and hollow like tubes, from the extremity of which issued drops of liquor; and their canals, as well as their glands seemed to be full of a sparkling fluid. In other species of plants these hairs and these canals exhibit different forms, colors and fluids. There are even glands resembling basons of a circular, square, or radiated figure. Now Nature has made nothing in vain. When she forms a place fit to be

inhabited she never fails to people it with animals. She is not confined by the smallness of the space: she has placed animals with fins in single drops of water, and in such numbers, that Lewenhoeck counted several thousands Many others besides him, and among the rest Robert Hook have seen in a drop of water, of the size of a grain of millet, ten, thirty, and even forty-five thousand. Those who are unacquainted with the extent of the patience and sagacity of an observer, might call in question the accuracy of these observations, had not Lyonnet, who relates them in Lesser's Theology of Insects, demonstrated their possibility by a very simple process. We are at least certain of the existence of those animals whose figures we have designed. We find others with feet armed with claws, on the body of the fly, and even on that of the flea. We may therefore conclude, by analogy, that there are animals which feed on the leaves of plants, like the cattle in our meadows, which recline in the shade of hairs imperceptible to human eyes, and which drink from their glands, formed like suns, liquid gold and silver. Every part of a flower must present them with spectacles of which we have no idea. The yellow antheræ suspended on white threads, appear to them like double bars of gold balanced on columns more beautiful than ivory; the corallæ, like vaults of rubies and topazes, of immeasurable extent; the nectaria like rivers of sugar; the other parts of the blossom like cups, urns, pavilions and domes, which the architecture and workmanship of men have never imitated.

This assertion is not founded only on conjecture; for, having one day examined some flowers of thyme with a microscope, I discovered to my great surprise, superb long-necked flasks of a substance resembling amythysts, from the mouth of which seemed to bubble melted gold. I never examined the simple coralla of the smallest flower, without finding that it was composed of an admirable substance, semi-transparent, interspersed with brilliant

particles, and exhibiting the most lively colours. The animals which live beneath their rich reflections must have ideas very different from ours concerning light and the other phenomena of nature. A dew drop filtering through the capillary and transparent tubes of a plant, appears to them like a thousand fountains; collected into a globule at the extremity of one of its hairs, it is a boundless ocean, and when evaporated in the atmosphere an aerial sea. They must, therefore, be accustomed to behold fluids ascending instead of descending, assuming a round figure instead of presenting a level surface, and rising in the air instead of falling. Their ignorance must be as wonderful as their knowledge. As they can be thoroughly acquainted only with the harmony of the most minute objects, that of larger must totally escape them. They undoubtedly are ignorant that there exists men, and, among them, men of science who know and explain every thing, and who, transient beings like themselves, soar to an elevation which they can never attain, while they, by favor of their diminutive size, are acquainted with another world in the last division of matter and of time. Among these ephemeral creatures youth lasts but for a morning, and decrepitude approaches with the night. If they have histories, they have months, and years, and ages, and epochs, proportionate to the duration of a flower. Their chronology is as different from ours, as their system of optics and hydraulics. Thus as man approaches the elements of nature, the principles of his knowledge vanish away.

Such, then, must have been my plant and its native inhabitants in the eyes of those insects; but if, like them, I could have acquired an intimate knowledge of this new world, still I should not have possessed its history. It would have been necessary to study its relations with the rest of Nature, with the sun which makes it flourish, with the winds which propagate it by its seed, and the streams whose banks it secures and embellishes. It would have been necessary to discover, how it is preserved in winter

during cold that cleaves the very stones, and again recovers its verdure in spring, though no care is bestowed to protect it from the frost: how a feeble, creeping plant can raise itself from the lowest depth of the vallies to the summit of the Alps, and spread over the globe from north to south, from mountain to mountain, forming on its way, with the plants of every climate, a thousand charming pieces of net-work of its white flowers and its rose-colored fruits; how it could have extended from the mountains of Cashmir to Archangel, and from the rugged rocks of Norway to the extremity of Kamschatka,; how, finally, it should be found in the two portions of America, though an infinite number of animals make war upon it, and no gardener bestows any trouble on its propagation.

With all this knowledge, I should still have possessed only the history of the genus and not that of the species. I should still have to examine the varieties, each of which is characterised by its flowers, either single, or coupled, or disposed in bunches; by the color, the smell, and the taste of its fruits; by the size, the indentations, the smoothness, or the softness of its leaves. One of our most celebrated botanists, Sebastian Le Vaillant* discovered, in the environs of Paris only, five different species, of which three have flowers but bear no fruit. In our gardens are cultivated a dozen foreign kinds, as those of Chili, Peru, the Alps, and that of Sweden, which is green, &c. But how many varieties are unknown to us! Has not each degree of latitude one particular to itself? May we not presume that there are trees which bear strawberries, as we know that there are others which produce pease and kidney-beans? May we not even consider as varieties of the strawberry the numerous species of raspberry, and of the bramble with which it has a striking analogy in the indentations of its leaves, in its tendrils which creep along the ground and replant themselves, in its rosiform flowers, in the figure of its fruits, whose seeds are on

* The author of *Botanicon Parisiense.*

the outside? Has it not likewise an affinity with the sweetbriar and the wild rose by its flowers; with the mulberry-tree by its fruits and its leaves, and even with clover, of which one kind in the vicinity of Paris, bears its seed in clusters, in the form of strawberries, whence it is denominated *trifolium fragiferum*? If we now reflect that all these species, varieties, analogies, and affinities, have, in every latitude, necessary relations, with a multitude of animals, and that we are utter strangers to these relations, we shall be convinced, that the complete history of the strawberry would furnish sufficient employment for all the naturalists in the world.

What a task would it then be to write, in the same manner, the history of all the species of vegetables, scattered over the surface of the globe! The celebrated Linnæus reckoned from seven to eight thousand, but he had not travelled. Sherard is said to have been acquainted with sixteen thousand. A more modern botanist boasts of having himself made a collection of twenty-five thousand, and he estimates those which he had not seen at four or five times that number. We must be convinced, however, that all these calculations fall very short of the truth, when we reflect, according to the observation of the last-mentioned naturalist, that we know scarcely any thing of the interior of Africa, of the three Arabias, of the two continents of America; very little of New Guinea, New Holland, New Zealand, and the numerous islands of the South Sea, most of which are still unknown. Of the extensive islands of Ceylon and Madagascar, of the immense archipelagoes, of the Philippines and Moluccas, and indeed of almost all the Asiatic islands, we know little more than a portion of the coasts. To the vast continent of Asia, excepting some great roads in the interior, and some of the coasts frequented by the Europeans for the purposes of trade, we may be said to be utter strangers. How many regions are there in Tartary, in Siberia, and even in many kingdoms of Europe, in which no botanist ever set his

foot! Some, indeed, have pretended to give descriptions of the plants of Malabar, of Japan, of China, &c. but if we reflect that all they explored was a small portion of the shores of those countries, which they traversed but one season of the year, when only a part of the plants natural to each climate make their appearance; that their researches were confined to the country situated in the vicinity of our establishments; that they could not penetrate into deserts, where they would have found neither subsistence nor guides, nor venture into the midst of a multitude of barbarous nations, of whose languages they were ignorant; we shall find that their most vaunted collections, though extremely valuable, are yet very imperfect.

To convince ourselves of this, we need only to compare the time they spent in forming their collections of plants in foreign countries with that which Le Vaillant employed in collecting those of the vicinity of Paris alone. The learned Tournefort had before occupied himself with the same subject, and after a master so indefatigable, it was thought that all the other botanists of the capital might repose. His pupil Le Vaillant, ventured to tread in his steps, and he discovered such a number of neglected species, that he at least doubled the catalogue of our plants. He has made their number amount to fifteen or sixteen hundred, but among these he does not comprise such as differ only in the colour of their flowers, or the spots on their leaves, though Nature often employs these marks in the vegetable kingdom, to distinguish the species and to form their true characters. Boerhaave, his editor, speaks in the following terms of his laborious researches: "To this object he entirely devoted himself from the year 1696 till the month of March, 1722. During this long period he was wholly occupied with it. He never passed the smallest corner of ground, without collecting its plants; exploring in every direction the roads, the fields, the valleys, the mountains, the gardens, the forests, the ponds, the

marshes, the rivers, the banks, the ditches and the wells. In consequence of this assiduity, he discovered a great number which had escaped the penetrating eyes of the celebrated Tournefort." In this manner Sebastien Le Vaillant employed twenty-six whole years, in his native country, and frequently assisted by his pupils, in completing the botany of a few square leagues of land; while those, who have given to the world their collections of the plants of foreign kingdoms, were unaided, and devoted but a few months to the task. But though his sagacity and his perseverance seem to have left nothing more to be desired, yet I doubt whether he has collected all the presents with which Flora has strewed our fields, and, if I may be allowed the expression, whether he has looked to the bottom of her basket; for Pliny observed plants in places not comprised among those enumerated by Boerhaave, and growing on the roofs of houses and on the heads of ancient statues. So much, at least, is certain, that plants not described in the *Botanicon* of Le Vaillant, are from time to time discovered in the vicinity of Paris.

Were I, for my part, to hazard a conjecture on the number of the species of plants scattered over the earth, I have such an idea of the immensity of Nature and of her fecundity, that I think there is not a square league of land that does not contain some one that is peculiar to itself, or at least arrives there at greater perfection than in any other part of the world. If this opinion be correct, there must exist several millions of original species of vegetables, scattered over as many millions of square leagues composing the solid surface of our globe. The farther we advance towards the south, the more their variety increases in the same district. The island of Otaheite in the South Sea has a botany peculiar to itself, which has nothing in common with that of those portions of Africa and America situated under the same latitude, nor even with that of the adjacent islands. If we reflect, that each plant has several different names in its native country, that each

nation gives it a distinct appellation, and that these names vary in every century, we shall perceive what difficulties are added to the study of botany by its nomenclature alone!

All these preliminary notions, however, would still form a useless science, even if we were minutely acquainted with the parts of which plants are composed. It is their general figure, their attitude, their port, their elegance, the harmonies which they form when grouped or contrasted with each other, that it would be interesting to determine. I know not that any thing of this kind has ever been attempted. With regard to their virtues, it may be said that most of them are unknown, or neglected, or unskilfully employed. Their qualities are often abused for the purposes of making cruel experiments on innocent animals, while they might be converted into miraculous remedies for the evils of human life. In the royal cabinet, for example, are preserved arrows more fatal than those dipped by Hercules in the blood of the Lernæan hydra. Their points are impregnated with the juice of a plant so venemous, that though they have been exposed to the air for a great number of years, yet with a single scratch they are capable of killing in a few minutes the strongest animal. Let the wound be ever so slight, its blood instantly coagulates. But if it be made to swallow immediately a small quantity of sugar the circulation is suddenly restored. This poison and the remedy were discovered by the savages inhabiting the shores of the river of Amazons; and it is not amiss to observe, that they never employ this destructive medium in war, but only in the chace. Why have not we, who pretend to be so humane and so enlightened, endeavoured to ascertain whether this poison would not produce a salutary effect in those diseases in which the blood is subject to a sudden dissolution; and whether sugar would not be of advantage in those in which it becomes thick? But how, alas! can we apply the fatal and maliguant qualities of foreign vegetables to the preservation of the human race—we, who employ for our mutual des-

truction those which nature has bestowed upon us, tha we might lead a happy and an innocent life. These elms an beeches beneath whose shade the shepherdesses join in the merry dance, serve to make carriages for death-dealing cannons. With the very juice of the grape, given us by Providence to reconcile enemies, we intoxicate with fury our soldiers, who kill, without hating each other. The tall pines which Nature has planted amid the snows of the north, to afford shelter and warmth to its inhabitants, serve for masts to European vessels, that carry devastation among the peaceful nations of the south. With the hemp which clothes our poor villagers are made the sails of the corsairs, equipped to plunder the cultivators of India. The produce of our harvests and our forests navigates the ocean for the purpose of desolating both hemispheres.

But let us leave the history of men, and return to that of Nature. If we pass from the vegetable to the animal kingdom, we shall see a career incomparably more extensive opened to our view. A distinguished naturalist at Paris some years ago announced, that he possessed a collection of more than thirty thousand species of animals. I know not if the magnificent museum of natural history contains more; but this I know, that its collection of plants comprises only eighteen thousand species, of which about six thousand are cultivated in its garden. This number of animals, though so much superior to that of vegetables, is, however, nothing in comparison to that which exists on the surface of the globe. Let it be recollected that each plant is the rendezvous of different kinds of insects, and that probably there is not one which has not some species of fly, butterfly, grub, scarabeus, gall-insect, snail, &c, peculiar to itself; that these insects serve for food to other very numerous species, such as the spiders, beetles, ants, lion-ants, and the immense tribes of small birds, of which several classes, as the woodpeckers and swallows, subsist entirely upon them; that these birds are, in their turn, devoured by the birds of

prey, as the hawks, the falcons, the buzzards, the crows, the ravens, the sparrow-hawks, the vultures, &c. that the carcases of all these animals washed by the rains, into the rivers, and carried by their currents into the ocean, become the food of almost infinite tribes of fishes, to most of which the naturalists of Europe have not yet given a name; that innumerable legions of aquatic birds live at the expence of these fishes; and we shall be led to believe that every species of the vegetable kingdom serves for the basis of a great number of species of the animal kingdom, which multiply about it like the radii of a circle round its centre. In this simple sketch I have comprehended neither the quadrupeds, in all their gradations of size, from the mouse which feeds on grass, to the cameleopard that browzes on the foilage of the trees at the height of fifteen feet; nor the amphibious animals, nor the birds of night, nor the reptiles, nor the polypi, with which we are scarcely acquainted, nor the insects of the ocean of which some families, as those of crabs and shell-fish would alone be sufficient to fill our most capacious cabinets, were only one individual of each species to be admitted. Nor do I comprehend the madrepore with which the sea is paved between the tropics, and of which there are so many species that at the Isle of France I saw two large apartments filled with those growing round that island only, though there was but one of each sort. I have not yet mentioned several kinds of insects, such as the louse and the worm, of which every species of animal has peculiar varieties, that are attached to it, and at least treble the animated world; nor those infinite hosts, visible and invisible, known and unknown, which have no fixed determination, and which Nature has dispersed through the air, the earth and the depths of the ocean.

What a task, then, would it be, to describe each of these animals with the sagacity of a Reaumur! The life of a man of genius would scarcely be sufficient for the history of a few insects. However curious may be the

memoirs that have been collected concerning the manners and anatomy of the most familiar animals, still we vainly flatter ourselves that we are acquainted with them. In my opinion the principal part is wanting; I allude to the origin of their friendships and their enmities. This I consider as the essence of their history, and as intimately connected with their instincts, their amours, their wars, their attire, their arms, and even the form which Nature has given them. A moral sentiment seems to have directed their physical organisation. I know not that any naturalist ever devoted his attention to this subject. The poets have attempted to explain these wonderful and innate instincts by ingenious fables, like that of the swallow Progne, who shunned the forests, and her sister Philomela, who loved to warble in their solitary shades.

I never hear the enchanting and melancholy strains of a nightingale concealed among the foliage, and the prolonged piu-piu which, like sighs, interrupt the lays of that solitary warbler, but I am tempted to believe that Nature revealed her adventure to the sublime La Fontaine, at the same time that she inspired him with those verses. If his fables were not the history of mankind, they would still be to me a supplement to that of animals. Distinguished philosophers, doubting the evidence of their reason and their consciences, have ventured to treat of them as mere machines. They ascribe to them blind instincts which regulate in a uniform manner all their actions, without passion, without will, without choice and even without sensibility. On this subject I once expressed my astonishment to J. J. Rousseau, and said it was very strange that men of genius should have supported such an extravagant hypothesis. He replied with great truth: "When man begins to reason, he ceases to feel."

To overthrow their opinion, I shall not refer to the animals which surround us by their industry, as the beaver, the bee, the ant, &c. I shall mention but one instance, taken from the class of those that are the least docile, the

fishes; and among them I will select such as are guided by the most violent and the most stupid of instincts, which is that of gluttony. The shark is a fish so voracious as not only to devour his own species when he finds occasions, but likewise to swallow indiscriminately every thing that falls from vessels into the sea, cordage, sail-cloth, pitch, wood, iron and even knives. I have, however, witnessed his abstinence in two remarkable circumstances: in one, let him be ever so hard pressed by hunger, he never touches a kind of small fish speckled with yellow and black, called the pilot-fish, that swims before him and conducts him to his prey, which he does not see till he is close to it: for Nature, in order to balance the rapacity of this fish, has made him almost blind. In the other, if a dead fowl be thrown over-board, he approaches at the noise of its fall; but no sooner does he discover it to be a bird, than he instantly retreats: and this conduct has given rise to the proverb current among sailors, that "the shark runs away from a feather." It is impossible, in the first case, not to ascribe to him some portion of intelligence, which restrains his voracity in favor of his guides; and not to attribute his antipathy to birds in the second, to that universal reason, which, having destined him to live near the rocks, where the carcases of all the animals that perish in the waters are stranded, has implanted in him an aversion to the feathered tribes, that he might not destroy the sea-fowl which haunt those spots in great numbers, engaged like himself in seeking a subsistence and in cleansing the shores.

Other philosophers, on the contrary, have ascribed the manners of animals, like those of men, to their education: and their affections, as well as their natural enmities to similarity or dissimilarity of form. But if their friendships proceed from their similarity, why does the hen that walks in security at the head of her brood, round the horses and the oxen in a farm-yard, that often crush beneath their feet a portion of her family, call together her chickens

with the utmost inquietude, at the sight of a hawk, feathered like herself, which appears in the air like a black spot and which perhaps she never saw before? Why does the yard-dog howl in the night at the mere smell of the wolf that so nearly resembles him? If long habit could have any influence over animals as it has over men, why has the ostrich of the desert been made so familiar as to carry children on his plumed back, while it is impossible to tame the swallow, which, from time immemorial, has built her nest in our houses.

Where then are the historians of Nature, the sages who shall reveal to us those mysteries of the cabinet of the heavens, without an explanation of which it is impossible to write the history of any animal on earth. Never is any species observed to deviate like man, from the laws it has received from Nature. The bees still live every where in republics, as they did at the time of Esop. The common flies still retain their wandering inclinations, like a populace without police and without restraint. Why has there not existed among them some Lycurgus to collect them for their general welfare, and to give them, like the first legislators among men, laws founded on their weakness and the necessity of associating together? Why, on the other hand, as Machiavel asserts of people who are too happy, does not some Catiline step forth among the dogs, proud of their superior strength, and invite them to abuse the confidence of their masters, for their general destruction; or some Spartacus to summon them by his howl to liberty, to assume the dominion of the forests—them, to whom nature has given arms, courage and the art of jointly conquering the most formidable animals? When so many trivial laws within our sight are either unknown or misconceived, how can we venture to assign those which regulate the courses of the stars, and which embrace the immensity of the universe.

To these difficulties opposed by nature must be added the obstacles we ourselves throw in the way. In the

first place, methods and systems of every kind prepare the mode of seeing each individual. I do not speak of metaphysicians who explain it by abstract ideas, nor of algebraists with their rules, nor of geometricians, with their compasses, nor of chemists with their salts, nor of the revolutions which their opinions, though highly intolerant, undergo in every century. Let us adhere to such notions as are the most constant and the most accredited, beginning with the geographers. They shew us the earth divided into four principal parts, though it is actually composed of only two; instead of the rivers that water, the rocks that fortify, the chains of mountains that part it into climates, and the other natural sub-divisions; they exhibit it to us streaked with lines of every color, which divide and sub-divide it into empires, dioceses, governments, districts, and parishes. They have mutilated their names or substituted others without signification, for those given them by the first inhabitants of each country, and which so accurately expressed their nature. They have, for instance, given the appellation of the Town of Angels to a place situated near the city of Mexico, which the Spaniards have often deluged with human blood, but which the Mexicans denominated *Cuetlax-coupan*, that is, snake in the water; because one of the two springs which the town contains is of a poisonous quality: that of Mississippi to the great river of North America called by the savages *Meschasébé*, the father of waters; that of Cordilleras, to the lofty mountains, covered with eternal ice, which border the South Sea, and which are denominated by the Peruvians, in the royal language of the incas, *Ritisiyu*, ridge of snow; with an infinite number of the same description. They have robbed the works of nature of their characters and nations of their monuments. When you read these ancient names and their explanations in Garcilasso de la Vega, in Thomas Gage and the early voyagers, you imprint upon your mind, with a few simple words, the scenery and the history of every country; without taking into considera-

tion the respect attached to their antiquity, that renders the places of which they speak still more venerable. The Chinese with the exception of those who traffic with the Europeans, are ignorant that their country is called China. By them it is denominated *Chum-kos*, the kingdom in the middle. They change its name as often as the families of their sovereigns become extinct. A new dynasty gives it a name; such is the decree of the laws, enacted to teach kings, that the fate of their people is dependent on them like that of their own families. The Europeans have destroyed every kind of convenience. They continually endure the punishment of this injustice, as they likewise suffer for many others; for as they obstinately persist in giving what names they please to the countries they conquer and to those in which they settle, it often happens that you see the same countries in Dutch, English, Portuguese, Spanish or French maps or narratives, without recognizing them. Even their longitude is changed, every nation now reckoning from its capital.

Botanists involve us in still greater perplexities. I have mentioned the perpetual variations of their dictionaries, but their method is not less faulty To distinguish plants they have invented complicated characters, which, though borrowed from every part of the vegetable kingdom, frequently deceive them; but they have never attempted to express their general character, by which they would be at once recognized by the ignorant. They require magnifying glasses and scales to class the trees of a forest. To see them standing and covered with foliage is not sufficient, they want the flowers and often the fructification. A peasant recognizes them all in the branches composing his faggot. To give me an idea of the varieties of germination they shew me in vases, a long succession of naked seeds of every form, but it is the capsule which preserves them, the tufts which wing their flight, and the elastic branches which project them to a distance, that it is of importance to examine. To explain the character of a flower, they

shew it to me dry, discoloured and expanded in a herbary It is in such a state that I should recognize a lily? Is it not on the bank of a stream raising his splendid stem above the other plants, and reflecting in the water his beautiful calices, whiter than ivory,* that I should admire the monarch of the vallies? His incomparable whiteness is not less brilliant, when dappled as with specks of coral, by small scarlet scarabei, of a hemispherical form, and spotted with black, which almost always seek an asylum on his bosom? Who can recognize in a dried rose the queen of flowers? To be at the same time the object of love and of philosophy, she should be seen issuing from the cleft of a humid rock, clothed in her native verdure, waved by the breath of Zephyr on her prickly stem, bathed in the tears of Aurora. and by her brilliancy and her perfumes inviting the hand of the lover. Sometimes a cantharis, alighting on her corolla, heightens the carmine with its emerald green; it is then that this flower seems to tell us, that, like pleasure, whose emblem she is both by her charms and the shortness of her duration, she carries danger around her and repentance in her bosom.

Naturalists remove us still farther from Nature, when they endeavour to explain, by uniform laws and the simple action of the air, of water and of heat, the development of so many plants that grow on the same dunghill, of such different colors, forms, tastes and perfumes. If they attempt to decompose their principles, poison and food

* According to botanists the lily has no calix, but only a polypetalous corolla. The flowers are denominated coralla and the cups or cases of the flowers calices. *Calix* in Greek and Latin signifies a cup, and *corolla* a little crown. Now an infinite number of flowers, as the cruciform, the papillous, the long-necked flowers, and a multitude of others, are neither shaped like a crown, nor are their cases in the figure of a calix. I may venture to affirm that if botanists had given the simple name of case or cover to the parts of the flower which protect the blossom, they would have been led to more than one curious discovery. This impropriety in the elementary terms of the sciences is the first contortion given to human reason, and conducts it from the very outset far from the paths of nature.

present in their furnaces the same results. Thus Nature mocks their art as well as their theory. The single plant of wheat, which has been left to the management of the illiterate is employed for an infinite number of purposes, while multitudes of vegetables have remained useless in the laboratories of men of science. I recollect having formerly seen long dissertations on the method of employing horse-chesnuts as food for cattle. Every academy in Europe has furnished at least one, and the result of all their investigations was, that the horse-chesnut is of no use, unless prepared at a great expence, and that it can be employed only for making wax candles and hair powder. I was astonished, not that naturalists were ignorant of its use, and that they had studied only the interests of luxury, but that Nature had produced a fruit unfit even for animals. From this ignorance, I was at length drawn by the beasts themselves. Walking one day, in the Bois de Boulogne, with a horse-chesnut in my hand, I observed a goat browzing. I approached and amused myself with caressing her. No sooner did she perceive the chesnut between my fingers, than she seized and instantly devoured it. The child who tended her told me, that all goats fed upon that fruit, which caused them to have a great quantity of milk. At some distance, I observed in the alley of chesnut-trees, which leads to the castle of Madrid, a number of cows solely engaged in seeking horse-chesnuts, which they ate with great avidity, without the addition of wash or brine. Thus our scientific methods conceal from us natural truths, known even to simple cow-herds.

What a spectacle is presented by the collections of animals in our cabinets. In vain the art of our Daubentons restores to them an appearance of life; in spite of all the industry employed to preserve their forms, their stiff and motionless attitude, their fixed and languid eyes, their bristling air announce that they have been pierced by the shafts of death. There beauty itself inspires horror, while

the plainest objects are pleasing in the place which Nature has assigned them. I have more than once beheld in the islands, with delight, the crabs on the beach endeavouring to penetrate a large cocoa-nut with their claws; or a shaggy monkey balancing himself at the top of a tree, at the extremity of a liane covered with pods and with brilliant flowers. Our books on nature are a mere romance and our cabinets nothing but a tomb. How have our speculations and our customs degraded her! Our treatises on agriculture shew us in the fields of Ceres, only sacks of corn; in the favorite meads of the nymphs, nothing but hay-stacks, and in the majestic forests only piles of wood and faggots. What injury have not pride and avarice done her; How many charming hills have been degraded by our laws! How many majestic rivers are reduced to slavery by imposts! The history of mankind has been disfigured in a very different manner. If we except the interest with which religion and humanity have inspired some good men, the other historians have been guided by a thousand passions. The politician represents them as divided into noble or commoners, papists or Huguenots, soldiers or slaves; the moralist into misers, hypocrites, ambitious men or debauchees; the tragic poet, into tyrants and oppressed: the comic, into buffoons and eccentric characters; the physician into the pituitous, phlegmatic and bilious. All exhibit subjects of disgust, hatred, and contempt; all have dissected man and shews us nothing but his carcase. Thus the most dignified object of the creation has, like the rest of nature, been degraded by our science.

I do not, however, assert, that from these partial methods no useful discovery has resulted; but all these circles with which we circumscribe the supreme power, instead of assigning limits to it, only demonstrate those of our genius. We accustom ourselves to inclose in them all our ideas, and incredulously to reject all that cannot be brought within their compass. We resemble the Sicilian tyrant who

extended every passenger on his bed of iron; he stretched by force, the limbs of those who were shorter than his bed, and cut off the legs of such as were longer. It is thus we apply all the operations of Nature to our pitiful methods, in order to reduce the whole to one common standard. Hurried away myself, by the spirit of the age in which I live, I gave at the end of the journal of my voyage to the Isle of France, a system of botany, in which I pretended to explain the expansion of plants, as our naturalists explain that of madrepores, from the mechanism of the small animals which constitute them. I quote this work, though I composed it merely as an amusement, to prove how easy it is to support a false principle by true observations; for having communicated it to J. J. Rousseau, who was, it is well known, a great proficient in botany, he is said to me; I do not adopt your system; but it would cost me at least six months to refute it; and even then, I could not flatter myself with the certainty of having succeeded. Had the decision of this candid gentleman been wholly unreserved, it could not have justified my libertinism.

Fiction embellishes the history of man only, it degrades that of nature. Nature is herself the source of all that is ingenious, amiable, and beautiful. By applying to her the violence of our imaginary laws, or by extending to all her operations, those with which we are acquainted, we conceal others, worthy of the highest admiration, with which we are totally unacquainted. We add, to the cloud with which she veils her divinity, that of our own errors. They get into credit by time, by professorships, by books, by protectors, by associations, and especially by pensions; whereas no one is paid for searching after truths, which have the improvement of mankind for their only object. We carry with us, into researches so independent and so sublime, the passions of the college and of the world, intolerance and envy. Those who enter first on the career oblige those who come after them to walk in their foot-

steps, or to give it up; as if Nature were their patrimony, or, as if the study of Nature were on exclusive trade, that did not admit of every one's participation. What trouble did it cost to eradicate in France, the metaphysics of Aristotle, which had become a species of religion? The philosophy of Descartes, which supplanted it, might have subsisted to this day, had its revenues been as ample. That of Newton, with it's attractions, is not more solidly established. I have an unbounded respect for the memory of these great men, whose very deviations have assisted us, in opening great highways through the vast empire of Nature; but, on more occasions than one, I shall combat their principles, and especially, the general applications which have been made of them, in the full persuasion that if I renounce their systems, I promote their intentions. It was the study of their whole life to raise men towards the Deity, by their sublime discoveries, without suspecting, that the laws which they were establishing in physics, might, one day, serve to subvert those of morality. In order to form a right judgment of the magnificent spectacle of Nature, we must suffer every object to remain in its place, and remain ourselves in that which she has assigned to us. It is from a regard to our happiness, that she has concealed from us the laws of her Omnipotence. How is it possible for a being so feeble as man, to embrace infinite space? But she has brought within our grasp what it is at once useful and delightful to know: namely, the emanations from her beneficence. In the view of uniting mankind, by a reciprocal communication of knowledge, she has given to each of us, in particular, ignorance, treasuring up Science in a common stock, to render us necessary and interesting to each other. The Earth is covered over with vegetables and animals, the simple vocabulary of which no Scholar, no Academy, no one Nation, will ever be able perfectly to acquire; but it is to be presumed, that the human race is acquainted with all their properties. In vain do enlightened Nations

boast, that they are the great repositories of all the Arts and Sciences. It is to Savages, to men utterly unknown, that we are indebted for the first observations which are the source of all Science. It is neither to the polished Greeks nor Romans, but to Nations which we denominate barbarous, that we owe the use of simples, of bread, or wine, of domestic animals, of cloths, of dye-stuffs, of metals and of every thing most useful, and most agreeable, for human life.

Modern Europe glories in her discoveries; but the invention of the art of Printing, one of the fairest titles to immortality, is to be ascribed to a person so obscure, that several cities of Holland, of Germany, nay, of China, have claimed the discovery as their own. Galileo would never have calculated the gravity of air, but for the observation of a fountain-player, who remarked that water could rise only up to thirty-two feet in the tubes of a forcing engine. Newton had never read the starry heavens, unless a spectacle maker's children, in Zealand, had, at play, with the lenses in their father's shop, suggested the first idea of the telescopic cylinder. Our artillery would never have subjugated the New World, but for the accidental discovery of gun-powder by a lazy monk; and whatever glory Spain may pretend to derive from the discovery of that vast Continent, the savages of Asia had planted Empires there long before the arrival of Christopher Columbus. What must have become of that great man himself, if the good and simple inhabitants whom he found in the country had not supplied him with provisions? Let Academies, then, accumulate machines, systems, books, elogiums: the chief praise of all is due to the ignorant, who furnished the first materials. Advancing no higher claim, I presume to contribute my humble offering. It is the fruit of many years of application, which, amidst storms long and severe, stole away in these calm researches, like a single day of serenity. I earnestly wished, if it should not be permitted me to reach a boundary, at which to stop, to communicate

to others, at least, the pleasure which I had enjoyed on my way. I have conveyed my observations in the best style of which I am capable; frequently stepping aside to the right hand and to the left, as the subject carried me; sometimes abandoning myself to a multitude of projects, which the infinite intelligence of Nature inspires; sometimes dwelling with complacency on happier seasons and situations, which are never more to return; sometimes plunging into futurity, panting after a more fortunate state of being, of which the goodness of Heaven affords us now and then a glimpse, through the dark clouds of this wretched life. Descriptions, conjectures, perceptions, views, objections, doubts, nay, my very ignorances, I have heaped all on one pile; and I have given to these ruins the name of studies, as a painter does to the studies of a great original, to which he was unable to give a finishing. Amidst this disorder, it was necessary, however, to adopt something like method, without which, the confusion of the matter must have still more increased the insufficiency of the author. I have followed the most simple. First I endeavour to refute the objections raised against a Providence; I, then, proceed to examine into the existence of certain sentiments, which are common to all men, and which constrain us to acknowledge, in all the works of Nature, the laws of her wisdom and goodness; and, finally, I make application of these laws to the globe, to plants, to animals, and to man.

Such from the outset, is the manner in which I propose to direct my course. If, in the rapid sketch I am going to present of it, the reader should be disgusted with its dryness, I must entreat him to reflect, that the same complaint must lie against all abridgments; that, in return, I spare him the fatigue of a preface; and that Pliny, who had a much better head than mine, has not hesitated to make up the first book of his Natural History, of the bare titles of the chapters which compose it. I said, then, to myself: in the first part of my work, I will display the blessings bestow-

ed by Nature, on the age in which we live; and the objections which have been started in it, against the Providence of it's author. I will conceal no one of these that I know of; and in order to give them greater force, I will exhibit them in their combination. I will employ, in refuting them, not metaphysical reasonings, like those of which the objections consist, and which never brought any dispute to a termination, but the facts themselves of Nature, which admit of no reply. With these same facts, I will raise, in my turn, difficulties which militate against the principles of human science, and which have been deemed infallible. I will from thence proceed to infer the feebleness of our reason; I will enquire whether there be universal truths, and what we are to understand by order, beauty, correspondency, harmony, pleasure, happiness, and their contraries; and finally what an organized body is. From this examination of our faculties, and of the effects of Nature, will result the evidence of many physical laws, constantly directed to one single end, and that of a moral law, which affects man alone, and the sentiment of which has been universal, in all ages, and among all nations. These are necessary preliminaries. Before we attempt to rear the fabric, the ground must be cleared and the foundation laid.

In the second part, I shall make application of these laws to the Globe; I shall examine its form, its extent, the division of its hemispheres, and as it is composed, like every other organized work of Nature, of parts similar, and of parts contrary. I shall consider, successively, its different elements, and the manner of their adaptation to each other, the fire to air, the air to water, the water to the earth. This order establishes among them a real subordination, of which the sun is the principal agent. But he is not the only mover in nature, and still less the Sovereign Disposer. His uniform action on the elements would, at last, separate or confound them. Other laws counterbalance his, and maintain the general harmony. I

shall point out the admirable variety of his course, the effects of his heat and light, and the wonderful manner in which they are weakened or multiplied in the Heavens, in the inverse ratio of latitudes and seasons. I shall speak of the great reverberations of Heaven, of the moon, of the *aurora borealis*, of the stars, and of the mysteries of night, only so far as the human eye is permitted to perceive them, and the heart to feel their impression. I shall speak, likewise of the nature of fire, not to explain it, but to evince our profound ignorance of the subject. This element, which renders all things else perceptible, itself eludes our most eager researches. We shall demonstrate, that there is neither animal, nor plant, nor even fossil, capable of subsisting any length of time in it. It is the only being which increases its bulk by communicating itself. It penetrates all bodies, without being penetrated by them It is divisible only in one dimension. It has no gravity. Though nothing attracts it to the centre of the earth, it is diffused through all the parts of the globe. Its nature differs from that of all other bodies. Its destructive and indefinable character seems to favour the opinion of Newton, who considered it only as a motion communicated to matter, and thereby reduced the number of elements to three. However, as it is one of the four general principles of life, in every living creature; as we often discover it, in others, in a dormant state, and as there is no one, as we shall see, but what has organs, or parts, disposed to weaken, or to multiply these effects, we must acknowledge it not only to be an element, but Nature's primary agent. From the fire I shall pass to the air. I shall examine the quality which it has of expanding and contracting, of heating and cooling; and the effects of that vast stratum of frozen air which surrounds our globe, about a league above the surface, and of which hardly any one of the phenomena has hitherto been explained.

I shall, next, consider the effects of water: in what manner heat evaporates, and cold fixes it; its different ex-

stences; of volatility in the air, in clouds, in dew, and in rain; of fluidity on the earth, in rivers, and in seas; of solidity at the poles, and on lofty mountains, in snow and ice. I shall enquire, how the seas, which are the great reservoirs of this element, are distributed, with relation to the sun; how they receive from him, through the mediation of the air, a part of their movements; in what manner they continually renew their waters, by means of the ice accumulated at the poles; the annual or periodical fusion of which, maintains their flux and reflux as constantly, as the fusion of the ices on the summit of high mountains renews and supplies, the waters of great rivers. I shall hence deduce the phenomena of the tides, of the monsoons in the Indian Ocean, and of the principal currents of the vast watery element. I shall, afterwards, hazard my conjectures respecting the quantity of water which surrounds the earth, in the three states of volatility, fluidity, and solidity; and shall examine whether it is possible, that, on being all reduced to a state of fluidity, they should entirely cover the globe. I shall consider in what manner all the parts of the earth, that is the dry land, are distributed with relation to the sun; so that there should be no cavity or valley, nor elevation of rocky mountain, but what must be, at some season of the year, exposed to his rays, and disposed at the same time, in the most perfectly adapted order, to multiply, or to mitigate, his heat, by its form, or even by its colour. I will demonstrate that, notwithstanding the apparent irregularity of the different parts of this globe, they are opposed, with so much harmony, to the different currents of air, that there is no one but what is, by turns, ventilated by winds, hot, cold, dry, and humid; that the cold winds blow most constantly into warm countries, and warm winds into cold countries; that these countries, in their turn, re-act on the air; so that the cause of the winds is not to be sought, according to the received opinion, in the places whence they proceed, but in those which they visit. I shall, after that, speak of

the direction of mountains, of their declivities, and of their aspects, with relation to the lakes and seas, whose emanations their different ridges are all adapted to receive; of the matter which attracts them, and fixes round their peaks, rising like so many electric needles.

Finally, I shall examine, for what reason Nature has divided the Globe into two Hemispheres; what means she employs to accelerate, or retard, the course of rivers, and to protect their mouths against the movements and currents of the Ocean. I shall treat of banks, of shallows, of rocks, of isles, whether in seas or rivers; and I shall prove, I am confident to say, to a demonstration, that these parcels detached from the Continent, are no more ruinous fragments, violently separated from them, than bays, gulfs, and inland-seas, are violent irruptions of the Ocean. I shall terminate this part, by indicating the principal agents, employed by Nature, in repairing her works: how she makes use of fire to purify, in the form of thunder, the air, so frequently loaded with mephitic vapours during the violent heats of Summer; and the waters of great lakes and seas, by the volcanos which she has placed in their neighbourhood, at the extremity of their currents, and which she has multiplied in warm countries; how she cleanses the basons of these very waters, which, in the course of a few ages, would be choked up by the accumulated spoils of the Earth, by means of tempests and hurricanes, which agitate them to the very foundation, and cover their banks with the wreck; and how, after having restored these wrecks to their first elements, by fires in the air, by volcanos, and the perpetual motion of the waves, which reduces them to sand, and to an impalpable powder on the shore of the sea, she repairs, by means of winds and attractions, the incessant diminution of the mountains, occasioned by the rains and torrents. I shall demonstrate, in a word, that, notwithstanding the enormous masses of the mountains, the profundity of the vallies, the tempestuous Oceans, and

temperatures the most opposite, which enter into the composition of this Globe, the communication of all its parts has been rendered easy to a being so small, and so feeble, as Man, and is possible only to him. This last view will furnish me with some curious conjectures respecting the earliest voyages undertaken by Mankind.

I flatter myself, that I have said enough to shew, in this simple prospectus, that the same intelligence, whose productions we so justly admire in plants and animals, presides equally in the edifice which we inhabit. The Earth has, hitherto, been considered as only in a state of rain; and it is this prejudice which renders the study of Geography so insipid; but I venture to affirm that, after perusing my trivial observations, the course of a rivulet, on a map, will appear more agreeable than the port of a plant in a Botanist's herbal, and the topography of a place, as interesting as its landscape.

In the third part of this work, I will shew how the different parts of plants are disposed in correspondence with the Elements, in such a manner that, far from being a necessary production of theirs, as some Philosophers pretend, they are, on the contrary, almost always in opposition to their action. I shall refer, therefore, their flowers to the Sun; the tickness of their barks, the scurf which covers their buds, the hair, the down, the resinous substances with which they are clothed, to the absence of solar heat; the pliancy, or stiffness, of their stems, to the different impulsions of the air; their leaves, to the waters of Heaven: finally, their roots, to sands, to mires, to rocks, by their fibres, their pivots, and their long cordage. This last relation of plants to the Earth is, if I may judge, the most important of all, though the least observed, for there is not a single one, but what is attached to it, whether it floats in water, or balances itself in the air; no one but derives part, at least, of its nutriment from thence, and, in its turn re-acts on the Earth, by the shade which contributes to its freshness, by the offal which fertilizes it,

and by the roots which bind its different *strata*. I shall adhere, however, to the exterior characters by which Nature seems to divide them into different genera. Their principal character, it is very difficult to determine, not only because the simplest plant unites a very great variety of relations to all the Elements, but because Nature does not place the character of her works, in any one of the parts, but in their combination. We shall seek that of each plant, therefore, in its grain, which, as being the principle, must unite every thing proper for its expansion, and determine, at least, the Element in which it must grow. Those, accordingly, which have grains extremely volatile, or furnished with tufts of down, pinions, sails, &c. shall be referred to the air. They grow, in fact, in places exposed to the wind, as most part of the gramineous, or the thistle tribe, &c. Those which have fins, floaters, and other instruments of swimming, shall be assigned to the water; not only such as the fucus, the alga, and other sea-plants, but the cocoa-tree, the walnut, the almond, and other vegetables which affect the waters edge. Those, finally, which, by their roundness, and other varieties of form, are adapted for rolling, springing, catching, &c. and are susceptible of various other movements, shall be allotted to the Earth, properly so called. This reference of plants to Geography, presents to us, at once, a great general order of easy comprehension; and a multitude of subdivisions, which we may run over, very agreeably, in detail. First, their genera divide themselves, like those of animals, into aërial, aquatic, and terrestrial. Then, their classes are subdivided relatively to the Zones, and to the degrees of latitude of each Zone; such are, to the South, the class of palms, and, to the North, that of firs; and their species to the territory of that Zone, according as it is champaign, mountainous, rocky, marshy, &c. Accordingly, in the class of palms, the cocoa-tree of the sea-shore, the latanier on the strand, the date of the rocks, the palmist of the mountains, and so on, crown the various sites of the torrid

Zone; whereas in that of firs, the pine, the spruce, the larch, the cedar, &c. divide among themselves the empire of the North. This order, by putting every vegetable in its natural place, furnishes us, besides, with the means of tracing the use of all its parts; and, I am bold enough to affirm, of tracing the reasons which have determined Nature to vary their form, and to create so many species of the same genus, and so many varieties of the same species, by discovering to us the admirable correspondency which they have, in every latitude, with the Sun, the Winds, the Water, and the Earth On this plan, we have a glimpse of the light which Geography may diffuse over the study of Botany; and of the light with which Botany, in its turn, may illuminate Geography; for, supposing we were enabled to form botanical charts, in which, by colours and signs, should be represented, in each particular country, the reign of each vegetable there produced, by determining its centre and limits, we might perceive, at once, the fecundity proper to each district. This knowledge would supply very ample means of rural economy, as we might substitute to the indigenous plants which were there in greatest abundance, and most vigorous, such of our domestic plants as are of the same species, and which would there infallibly succeed. Besides, these different classes of vegetables would, in their various natural arrangement, indicate the degrees of the humidity, of the driness, of the cold, of the heat, and of the elevation of each district, with a precision which our barometers, thermometers, and other physical apparatus, can never attain. I omit a multitude of other relations, productive of pleasure and of utility, which would result from such classification, but which I shall endeavour to unfold in their place.

In the fourth part, which treats of animals, I shall pursue the same track. I shall present, first, their relations to the Elements. Beginning with that of fire, I shall consider the relation which they have to the Luminary which is the source of it, from their eyes furnished with

lids and lashes, to moderate the lustre of his light; from that state of torpitude, called sleep, into which most of them fall, when he is no longer above the Horizon; and by the colour of their skin, and the thickness of their furs, corresponding to their distance from him. We shall then trace the relations in which they stand to the air, by their attitude, their weight, their lightness, and the organs of respiration; to the water, by the various curves of their bodies, the unctuosity of their hair and plumage, their scales and fins; and, finally, to the Earth, by the form of their feet, sometimes forked, or armed with prongs and claws, adapted to a hard soil, sometimes broad, or furnished with a hide, suited to a yielding soil, and by other means of progression, which Nature has varied, in proportion to the obstacles which are to be surmounted. On the whole of this we shall observe, as in the case of plants, that so many configurations, so different, far from being, in animals, mechanical effects of the action of the Elements in which they live, are, on the contrary, almost always, in the inverse ratio of these very causes. Thus, for example, a great many fishes are cased in rough and hard shells, in the bosom of the waters; and many animals, the inhabitants of the rocks, are clothed with soft furs. We shall divide animals, therefore, as we did vegetables, by referring their genus to the Elements, their classes to the Zones, and their species, to the different districts of each Zone. This arrangement, at once, puts every animal in its natural place; but we shall reduce it to a fixedness of determination, still more precise, and more interesting, by referring the species of animal to that of the plant which a particular district produces in greatest abundance. Nature herself indicates this order. She has adapted to plants, the smelling, the mouths, the lips, the tongues, the jaws, the teeth, the beaks, the stomach, the chylification, the secretions which ensue, in a word, the appetite and instinct of animals. It cannot, indeed, be affirmed with truth, that every species of animal lives on one single

species of plant; but any person may convince himself, by experiment, that each of them prefers some one to every other, when permitted to choose. This preference is particularly remarkable, at the season when the production of their young engages attention. Then they are determined in favour of that which provides them, at once, with nutriment, litter, and shelter, in the most perfect suitableness of their situation. Thus the goldfinch affects the thistle, and hence, in the French language, derives his name from that of the plant*, because he finds a rampart in its prickly leaves, food in its seeds, and materials for his nest in its down. The bird-fly of Florida, for similar reasons, prefers the bignonia: this is a creeping plant, which finds its way to the tops of the highest trees, and frequently covers the whole trunk. He builds his nest in one of its leaves, which he rolls into the form of a cornet; he finds his food in its red flowers, resembling those of the foxglove, the nectareous glands of which he licks; he plunges his little body into them, which appears in the heart of the flower, like an emerald set in coral; and he gets in, sometimes, so far, that he suffers himself to be surprized there, and caught. In the nests of animals, then, we shall look for their character, as we sought that of plants in their grains. It is from these we shall be enabled to determine the Element in which they must live, the proper site of their habitation, the aliment best adapted to their constitution, and the first lessons of industry, of love, or of ferocity, which they receive from their parents. The plan of their life is contained in their cradles. However strange these indications may appear, they are those of Nature, who seems to tell us, that we may distinguish the character of her children, like her own, in the fruits of love, and in the care which they take of their posterity. She, frequently, lodges under the same roof, the vegetable and animal life, and unites the destiny of the one to that of the other. We see them bursting together from the

* In French, goldfinch is *chardonneret*, and thistle *chardon*.

similar progression. At the same instant of time they present, if I may be allowed the expression, the same metamorphoses. While the plant is unfolding, in succession, its germs, its buds, its flowers, its fruits, the insect is displaying, successively, on one of its leaves, the egg, the worm, the nymph, the butterfly, which contains, like its parents, the seeds of its posterity, with those of the plant which nourished it. It is thus that fable, far less marvellous than Nature, inclosed the life of the Dryad within the bark of the oak. These relations are so striking, in insects, that naturalists themselves, notwithstanding their prodigious number of isolated, and indeterminable classes, have characterized some of them by the name of the plant on which they live; such are the caterpillar of the tithymale, and the silk-worm of the mulberry. But I do not believe there is a single animal which deviates from this plan, not even excepting the carnivorous. Though the life of these last appears to be, in some measure, ingrafted on that of the living species, there is not one among them, but what makes use of some species of vegetable. This is observable, not only in dogs, which feed on the grass that bears their name, and in wolves, foxes, birds of prey, which eat the plants denominated from the names of the respective animals, but even in the fishes of the sea, which are entire strangers to our element. They are attracted, at first, to the banks, by insects, whose spoils they collect, which establishes between them and vegetables, intermediate relations; afterwards by the plants themselves, for most of them come to spawn on our coasts, only when certain plants are in flower, or in fruit. If these happen to be destroyed, the fishes visit us no longer. Dennis, governor of Canada relates in his Natural History of North America,* that the cod, which had been accustomed to frequent, in great numbers, the shores of the island of Miscou, disappeared in 1669, because the preceding year its forests had been destroyed by a conflagration. He

* Vol. II. Chap. xxii. p. 350.

remarks that the same cause had produced the same effect in several other places. Though he ascribes the flight of these fish to the particular effects of the fire, and though he is in other respects a very intelligent writer, yet we shall prove by other curious observations, that it was occasioned by the destruction of the vegetable which attracted them to the shore. Thus every thing in Nature forms a link of the same chain. The Fauns, the Dryads, and the Nereids give each other their hands. What a charming spectacle would a botanical zoology present! What unknown harmonies would be reflected by a plant on its animal, and by an animal on its plant. How many picturesque beauties would then unfold themselves! How many useful relations of every kind would thence result for our pleasures and our wants! A new plant in our fields would be sufficient to attract new birds to our groves, and unknown fishes to the mouths of our rivers. Might we not even increase the family of our domestic animals, by peopling the vicinity of the glaciers on the lofty mountains of Dauphiné and Auvergne, with herds of rein-deer, so useful in the north of Europe, or with the lamas of Peru, which love to reside at the foot of the snows of the Andes, and are clothed by Nature with the finest wool? We have often attempted, indeed, to rear foreign animals in our parks, taking care to chuse the species whose climate approached the nearest to our own; but they soon perished, because we forgot to transplant with them their peculiar vegetable. They were observed to be constantly restless, to hang their heads, to scratch upon the earth, as if demanding with sighs the food they had lost. An herb would have been sufficient to restore them to tranquillity, by reminding them of the tastes of early life, of the winds that were familiar to them, and of the delightful shades of their country: less unhappy, however, than men, who never cease to regret till they cease entirely to remember.

In the fifth part we shall treat of man. Every work on Nature has hitherto exhibited to us only individual

relations; to us man will present universal relations. We shall first examine those which he has with the elements. Beginning with that of light and fire, we shall observe, that his eyes are not turned towards heavens, as poets and even philosophers have asserted, but towards the horizon; so that he beholds, at the same time, the skies that give him light, and the earth on which he dwells. His rays of vision embrace nearly half of the celestial hemisphere and of the plain on which he walks; their powers extend from the grain of the sand beneath his feet, to the star which glistens over his head at a distance that cannot be assigned. He alone can enjoy both the day and the night, and can live either in the torrid or the frigid zone. If some animals partake with him of these advantages, it is only through his care and under his protection; he is himself indebted for them to the element of fire, of which he alone is the master. Some writers have asserted, that animals could make use of it, and that the monkies of America kept up the fires kindled by travellers in the forests. It is certain that they take delight in the heat of a fire, and that they approach to warm themselves at it when they perceive no person at hand. But, as they are sensible of its utility, why have they not preserved its use? Though the manner of keeping up a fire, by laying wood upon it, is so simple, yet none of them was ever susceptible of that degree of sagacity. The dog, possessing intelligence far superior to that of the monkey, witnessing daily the effects of fire, accustomed in our kitchens to live only on dress meat, would never think, were it to be given to him raw, of laying it upon the coals to broil. However slight this barrier which separates the man from the brute may appear, it is insurmountable to animals. This is a kind dispensation of Providence for the general security; for how many unforeseen and destructive conflagrations would occur, were fire at their disposal. The Almighty has entrusted the first agent of Nature only to that being who is alone capable of employing it in a rational manner

While some historians ascribe the use of it to beasts, others refuse it to men. Many nations, say they, were strangers to fire, before the arrival of Europeans in their country As a proof, they mention the inhabitants of the Marian islands, otherwise called the island of thieves, one of the opprobrious epithets so frequently employed by our navigators; but this assertion rests on mere supposition. They ground it only on the very natural astonishment expressed by those islanders, when they beheld their villages set on fire by the Spaniards,* whom they had kindly received; and at the same time they contradict themselves, when they relate that these people had canoes covered with bitumen. Hence it is natural to suppose that savages, who were unacquainted with iron, must have employed fire to hollow, or at least to caulk their little vessels. It is added, that they lived on rice, the preparation of which, in any way whatever, necessarily requires the use of fire. This element is every where necessary for the existence of man, even in the hottest climates. It is only with fire that he can in the night keep the beasts from his habitation; that he can drive away the insects eager after his blood; that he can clear the earth of the trees and herbage which cover it, and whose stems and trunks would prevent every kind of cultivation, were any other method of destroying them to be adopted. Finally, with fire, he in every country prepares his food, fuses metals, vitrifies rocks, hardens clay, tempers iron, and gives to all the productions of the earth the forms and the combinations suitable to his wants.

The utility he derives from the air is not less extensive. There are few animals capable, like him, of respiring it on the level of the sea, and on the summits of the highest mountains. He is the only being that gives to it all the modulations of which it is susceptible. With his voice

* See the account of their discovery by Magellan, in the History of the Marian Islands by Le Gobien, vol. ii. p. 44, and the History of the West Indies by Herrera, vol. iii. p. 10, and 712.

alone, he imitates the hissing, the screaming, and the singing of all the animals; and none besides him possesses the gift of speech. Sometimes he imparts sensibility to the air; he causes it to sigh in the pipe, to groan in the flute, to threaten in the trumpet, and to animate at pleasure, with his passions, brass, wood, and reeds; sometimes he makes it his slave; he compels it to grind, to stamp, and to move, for his advantage, a multitude of machines; he yokes it to his chariot, and obliges him to convey him over the waves of the very ocean.

That element in which most of the inhabitants of the earth are incapable of living, and which separates their different classes by a barrier more difficult to overleap than the climates, affords to man alone the most easy of communication. He swims, he dives in it; he there pursues the marine monsters into their abysses, he pierces the whale even under the ice, and lands on all its islands to establish his empire.

But he had no occasion for the power which he exercises over the air and the waters, to render his empire universal. He needed only to have remained on the earth where he was born. Nature has placed his throne on his cradle. All that has life repairs thither to pay him homage. There is not a vegetable which does not there fix its roots, not a bird which does not there construct its nest, not a fish which does not come thither to deposit its spawn. He is the only being who, notwithstanding the irregularity that appears on the surface of his domain, is so formed, as to be able to traverse all its parts. It is a fact truly admirable, that an equilibrium so perfect, so difficult to be preserved, and so contrary to the laws of mechanism, is established between all his members that no sculptor can make a statue in imitation of man, larger and heavier at the top than at the bottom, which can support itself erect and immoveable on a base as small as his feet. It would be overthrown by the first blast of wind. How difficult would it then be, to make it move like man him

self! There are no animals whose bodies are susceptible of so many different movements, and am I inclined to believe, that he unites in his person all those of which they are capable, for he can bend, kneel, creep, glide, swim, assume the figure of a bow, a wheel, a ball, he can run, walk, leap, ascend, descend, mount; in a word, he is equally fit for climbing to the summit of the rock, for walking on the surface of snow, for traversing rivers and forests, for gathering the moss of the fountain and the fruit of the palm-tree, for tending the bee and taming the elephant.

In addition to these advantages, Nature has collected in his person all the colors and forms most agreeable by their harmonies and by their contrasts. These she has accompanied with movements the most majestic and the most pleasing. It was only by the attentive observation of the latter, that Virgil was enabled to finish by a masterly stroke, the portrait of Venus, conversing in disguise, with Æneas, who did not know her notwithstanding her beauty, but recognised her by her air—*Vera incessu patuit dea*—Her gait betrayed the goddess. The Author of Nature has combined in man every species of beauty; he has formed of them such a wonderful assemblage, that the animals, in their natural state, are filled at the sight of him, either with love or with terror; which we shall prove by more than one curious observation. Thus those words, which in the first days of the world, gave him the empire over it, still remains in force: "And the fear of you and the dread of you shall be upon every beast of the earth, and upon every fowl of the air, upon all that moveth upon the earth, and upon all the fishes of the sea: into your hands are they delivered."

As he is the only being that has at his disposal fire, which is the principle of life, so he is likewise the only one that cultivates the earth by which life is supported. For all frugiverous animals agriculture is as necessary for him; this most of them experience, but yet none exercise

it. The ox would never have the sagacity to sow the seed which he treads on the barn-floor, nor the monkey the maize of the fields which he plunders. Writers give themselves great trouble to seek afar off the relations which beasts may have with man, in order to place them on a level with him, but they conceal those trivial differences under their eyes which form an immeasurable interval between them and us, and which are the more wonderful, the more easy they appear to be surmounted. Each of them is confined within a small circle of vegetables, and whatever may be its wants, its industry extends no farther than its instinct. The intelligence of man alone equals that of nature. He not only follows her plans, but even deviates from them, and substitutes others in their stead. He covers with vineyards and waving grain, situations destined for forests He says to the pine of Virginia and to the Indian chesnut: "Ye shall grow in Europe." Nature assists his labors, and seems, by her complaisance, to invite him to give her laws. It is for him that she has covered the earth with plants, and though their species are infinitely numerous, there is not one that he does not convert to his use. She has, in the first place, selected some from each class, to supply him with food and to be subservient to his pleasures, wherever he should be inclined to dwell; from the palms of Arabia, the date-tree; from the ferns of moluccas, the sago; from the reeds of Asia the sugar cane; from the solanums of America the potatoe; from the papillous plants kidney-beans and pease; lastly, the yam, the bread fruit, maize, and an innumerable multitude of eatable fruits, seeds, and roots are distributed for him among all the families of vegetables, and under every latitude of the globe. She has given to the plants which are the most useful to him the property of growing in every climate; domestic plants, from the cabbage to wheat, are the only ones which, like man, are citizens of the world. The others serve for his bed, his habitation, his clothing, the cure of his diseases, or at least for fuel.

But that none might exist which did not contribute to the support of his life, and that the remoteness and ruggedness of the situation in which they grow, might not prevent him from enjoying them, Nature has formed animals to go in quest of them, and to convert them to his advantage.

These animals are at the same time formed in an admirable manner to live in the wildest situations, and are impelled by the instinct of the utmost docility to approach the residence of man. The lama of Peru climbs with its cloven feet, which are provided with two spurs, the precipices of the Andes, and brings him its rose-colored fleece. The rein-deer, with her broad, parted hoof, traverses the snows of the north, and for him fills her teats with cream in mossy pastures. The ass, the camel, the elephant, the rhinoceros are distributed for his service over the rocks, the sands, the mountains and the marshes of the torrid zone. For him every district nourishes a servant; the wildest cherishes the most robust; and the most ungrateful soils supply the most patient. But it is the animal which are the most useful, that alone dwell with him over the whole earth. The heavy cow grazes in the vallies; the nimble sheep on the sides of the hills; the climbing goat browzes on the shrubs of the rocks; the hog, with his snout, grubs up the roots in the marshes, assisted by the spurs which Nature has placed at his heels to prevent his sinking; the duck, delighting in water, feeds on aquatic plants; the keen-eyed hen picks up all the seeds scattered in the fields; the pigeon, with rapid wing, those of the most remote forests, and the frugal bee collects even the dust of the flowers. There is not a spot of ground, all the plants of which they cannot turn to advantage. Those that are rejected by one are the favorite food of others; and even poisons serve to fatten them. The hog devours horse-tail and hen-bane; the goat feeds on the milk-thistle and hem-lock. All return at night to the habitation of man, buzzing, bleating, and with cries of joy, bringing with them the grateful tributes of the plants, changed, by

an inconceivable transformation, into honey, milk, butter, eggs and cream.

Man subjects to his dominion not only all the plants but likewise all the animals; though their diminutive size, their agility, their strength, their artifices, and their very elements seem to exempt them from his empire. To begin with the infinite legions of insects,—those serve as food for his ducks and his fowls. These birds swallow even venomous reptiles, without any consequent inconvenience. His dog reduces all other beasts under his subjection. His numerous varieties seem to have been destined for their different species; the shepherd's dog for wolves; the terrier for foxes; the grey-hound for the animals of the plains; the mastiff for those of the mountains; the setting-dog for birds; the spaniel for amphibious animals; in a word, from the lap-dog formed to please, to those enormous dogs of India, which, according to Pliny and Plutarch, attack only lions and elephants, and whose breed still exists among the Tartars, their species are so various in figure, size and instinct, that I think Nature has made as many kinds as there were species of animals to be subdued. We cross the breeds of cats, of goats, of sheep and of horses in a thousand ways; and notwithstanding all our combinations, we obtain only a few varieties which cannot, by any means, be compared with those of dogs.

Some philosophers ascribe one common origin to dogs, others attribute several different origins to men. They ground their system on the varieties of stature and color in the human species, but neither color nor size are characters in the opinion of naturalists. The former, according to them, is the effect of accident, and the latter is nothing more than a more complete development of forms. The difference of species proceeds from the difference of proportions: now this is the character of dogs. The proportions of man are every where the same; his black color between the tropics is merely the effect of the heat of the sun, which darkens his complexion as it approaches the line.

This color, as we shall see, is a bountiful dispensation of Nature. His stature is invariably the same at all times and in all places, notwithstanding the influences of food and of climate, which are so powerful over other animals. Some breeds of horses and of oxen are twice the size of others, as may be observed on comparing the great artillery horses from Holstein with the diminutive breed of Sardinia, which are no larger than sheep; and the huge oxen of Flanders with the small cattle of Bengal: but between the tallest and the shortest race of men, the difference is not more than a foot. Their stature is the same now, as in the time of the Egyptians; it is alike at Archangel and in Africa, as may be seen from the size of the mummies and the dimensions of the tombs of the ancient Indians, discovered in Siberia, on the banks of the Petzora. The somewhat inferior height of the Laplanders is, I presume, an effect of their too sedentary lives: for I have observed, even among us, the same diminution of stature in men of certain trades, which require but little exercise. The stature of the Patagonians, on the contrary, is more developed than that of the Laplanders, though they live under a latitude equally cold, because they give themselves much more motion. The Laplanders pass the greatest portion of the year shut up among their herds of rein-deer: the Patagonians, on the contrary, are incessantly roving about, and subsist only by hunting and fishing. It should be observed that the first travellers who described those two nations, greatly exaggerated the inferior stature of the one and the superior dimensions of the other; because they saw the former squatting in their smoky huts, and the latter in a position which magnifies every object, that is at a distance, on the elevations of their shores, (to which they repair, when they discover any vessels,) through the fogs which are so frequent in their climate, and which, as is well known, magnify all objects, especially those that are at the horizon, by refracting the light which surrounds them. The Swedes and Norwegians who inhabit the same

latitudes, where the cold is said to check the development of the human body, are of the same stature as the natives of Senegal, where the heat, for a contrary reason, ought to promote it; and yet neither the one nor the other are taller or shorter than the French. Man over the whole earth, is at the centre of all dimensions, of all movements, and of all harmonies. His stature, his members, and his organs are so justly proportioned to all the works of Nature, that she has rendered them as invariable as the whole which they compose. He forms a distinct genus, which has neither classes nor species, and eminently deserves the appellation of the *human race*. He forms one grand family, all the members of which are dispersed over the earth to collect its productions, and who can, in an admirable manner, communicate to each other their wants. Men in all ages have been united, not only by the interests of commerce, but by ties more sacred and more durable—the ties of humanity. Sages appeared, two or three thousand years ago in the east, and their wisdom still enlightens us in the extremity of the west. At the present day, if a savage is oppressed in the deserts of America, he sends his arrow from family to family, from nation to nation, and the flame of war is kindled in the four quarters of the world. We all are bondsmen for each other. We shall often recur to this great truth, which is the basis of the morality of subjects as well as of kings. The happiness of each individual is attached to the happiness of mankind. He is obliged to exert himself for the general welfare, because his own depends upon it. But his interest is not the only motive that renders virtue a duty; to Nature he is indebted for its sublimest lessons. As he is born without instinct, he is under the necessity of forming his understanding by her works. His imagination has conceived nothing, but after the models of every kind with which she has presented him: he created the mechanical arts from plans formed by the industry of animals; and the liberal arts and sciences from the harmonies and plans of

Nature herself. To her sublime studies he is indebted for a light which illumes no other animal. Instinct discovers to the animal nothing but its necessities; man alone has raised himself from the bosom of profound ignorance to the knowledge of a God. This knowledge was not confined to a Socrates or a Plato; they have it in common with Tartars, Indians, Savages, Negroes, Laplanders, with all mankind: it is the result of every contemplation, whether the subject of it be a moss or a sun. On this are founded all human societies without exception. As man has developed his intellect by that of Nature, he has endeavored to regulate his moral sentiments by those of her author. He felt that, to please him who is the principle of all good, it was necessary to contribute to the general welfare; hence his exertions in every age to raise himself to God by the practice of virtue. This religious character which distinguishes him from all sensible beings, belongs rather to his heart than to his reason: it is in him not so much an illumination as a sentiment, for it appears to be independent even of the spectacle of Nature, and manifests itself with as much force in those who live the most remote from her, as in those who are continually enjoying her beauties. The sensations of the infinity, of the universality, of the glory, and of the immortality which result from it, incessantly agitate the inhabitants of the city as well as those of the country. Man, feeble, miserable, and mortal, every where indulges in celestial passions. Thither, without his perceiving it, tend his hopes, his fears, his pleasures, his pains, his loves: and he passes his life in pursuing or in combating these fugitive impressions of the Deity.

Such is the career which I have proposed to myself. But, as in a long journey we sometimes perceive, on the way, flowery islands in the bosom of a great river, and enchanting groves on the summit of an inaccessible rock; in like manner the progress we make in the study of Nature will gradually disclose to our view delightful prospects. On these we can at least cast our eyes, if we are not per-

mitted to examine them more closely. We shall have occasion to remark, that all the works of Nature have contrasts, harmonies, and transitions, which unite her different empires to each other.

We shall examine by what magic it is, that contrasts are productive at once of pleasure and of pain, of friendship and of hatred, of existence and of destruction. From them proceeds that great principle, love, which divides all individuals into two great classes, the objects loving and the objects beloved. This principle extends from the animals and plants that are distinguished by sex, down to inanimate fossils, as metals that have lovers, most of which are still unknown to us; and from the salts that strive to unite in the fluids, in which they swim, up to the globes that mutually attract each other in the heavens. It opposes individuals of different sexes, and genera of different forms, to produce from them innumerable harmonies. Among the elements, light is opposed to darkness, heat to cold, earth to water; and their concords produce days, temperatures, and the most agreeable views. Among vegetables, we shall see, in the forests of the north, the thick and gloomy foliage, the tranquil attitude and the pyramidal form of the pine, contrasted with the delicate verdure and the moveable foliage of the birch, which, from its spreading top and narrow base resembles a pyramid inverted. The forests of the south will exhibit similar harmonies, and we shall discover them even in the herbage of our meadows. The same oppositions reign among animals, and to go no farther than those which are the most familiar, the bee and the butterfly, the hen and the duck, the sedentary sparrow and the roving swallow, the horse formed for speed and the sluggish ox, the patient ass and the capricious goat, and lastly, the cat and the dog display in our gardens, our fields, our houses, a continual contrast of forms, movements, and instincts.

In these harmonious oppositions I do not comprehend the carnivorous animals that make war on others; they

were not destined for the living, but for the dead. I understand by contrast, that which Nature has placed between two classes differing in manners, inclinations and figures, and to which she has nevertheless given certain secret sympathies, that lead them, in their natural state, to inhabit the same places, to associate and to live in peace together. Such is the contrast of the horse which delights to gallop in the same meadow where the ox gravely walks, ruminating as he goes. Such, likewise, is that of the ass, which 'oves to follow, with slow and tranquil step, the nimble goat up to the very rocks on which he climbs. From the bee and the butterfly, to the elephant and the cameleopard, there is not an animal on earth but what has its contrast, man only excepted.

The contrasts of man are within himself. Two opposite passions, love and ambition, balance all his actions. To love belong all the pleasures of sense; to ambition all those of the soul. These two passions are in perpetual counterpoise in the same subject: and while the former bestows on man every kind of corporeal enjoyment, and gradually sinks him below the level of beasts, the latter prompts him to aim at universal dominion, and at length to elevate himself above the Deity. These two contradictory effects may be observed in all men, who have it in their power to resign themselves, without obstruction, to those two impulses, whether in the class of kings or in that of slaves. The Neros, the Caligulas, the Domitians, lived like brutes, and demanded the adoration due to dogs. Among the Negroes we find the same incontinence, the same pride, and the same stupidity.

Nature, however, has bestowed these two passions on man for his happiness. She produces an equal number of each sex, in order to direct the love of every man to a single object, in which she has combined all the harmonies dispersed over her most beautiful works. Between the male and female, there is a great analogy of forms, of inclinations and of tastes, but there is a still greater differ-

ence of these very qualities. Love, as we shall see, results only from contrasts, and the greater they are, the more powerful is its energy; as I am able to demonstrate by a thousand historical facts. It is well known, for example, with what excess of passion the tall, clumsy soldier, Mark Antony, loved and was beloved by Cleopatra; not the person whom the sculptors represent with the stature of a Sabina, but the Cleopatra whom history describes as little, lively, sprightly, running at night in disguise about the streets of Alexandria, and causing herself to be carried, concealed in a parcel of goods, on the shoulders of Apollodorus, to pay a visit to Julius Cæsar.

The influence of contrasts in love is so certain, that, on beholding the lover, it would be easy to draw the portrait of the beloved object without having seen her, provided it were known that the passion is extremely violent. This I myself have several times proved; among others in a town where I was entirely a stranger, a friend of mine carried me to visit his sister, a very virtuous young lady, and informed me by the way that she was in love. When we had arrived at her house, the conversation happening to turn upon love, I declared that I knew the laws which determined our choice in love, and that, if she pleased, I would draw the picture of her lover, though he was totally unknown to me. She bade me defiance: on which, taking the contrary to her tall, robust figure, to her temperament and her character, which her brother had described to me, I drew her lover as a little man, not lusty, with blue eyes, fair hair, somewhat fickle, eager after information.—Every word made her blush up to the eyes, and she was seriously angry with her brother, whom she accused of having revealed her secret. This, however was not the case, and she was as much astonished as herself. These observations are of more importance than is generally imagined. They will prove to us how widely our institutions deviate from the laws of Nature, and how much they weaken the power of love, when they assign to women the studies and occu

pations of men. Virtue alone knows how to turn these contrasts to account in the married state, in which the duties of the two sexes are so very different. She there presents to their native ambition a career the most sublime in the education of their children, whose reason it is their duty to form, and whose first sentiments of filial affection they receive in return. It is in the hearts of their children that their memory is to be perpetuated on earth, in a manner more affecting and more durable than the memory of kings is preserved by public monuments. What power can equal that which confers existence and reason; and what recollection can last so long as that of filial gratitude? The government of a good sovereign is compared to that of a father, but the government of a virtuous father, can be compared only to that of God himself. Virtue is to man the true law of Nature; it is the harmony of all harmonies. Virtue alone can render love and ambition beneficent. From privations the most severe it derives the highest gratification. Rob it of love, friendship, honor, the sun, the elements, it feels that under a Being just and good, abundant compensations are reserved for it, and the injustice of man only serves to increase its confidence in God. It was this, that in every situation in life, supported an Antoninus, a Socrates, an Epictetus, a Fenelon, that rendered them at the same time the happiest and the most respectable of men.

If, on the one hand, Nature has established contrasts in all her works, on the other she has deduced from them harmonies which unite them all again. It would appear that after fixing upon a model, she was desirous to communicate her beauty to every part. Thus the light and the disk of the sun are reflected in a thousand ways, by the planets in the heavens, by the parhelia, and the rainbow in the clouds, by the *aurora borealis* in the ices of the north; in a word, by the refractions of the air, the reflexes of the waters, and the specular reflections of most objects on the earth. The islands in the midst of the ocean

represent the mountainous forms of the continent, and the Mediterranean seas, and the lakes in the bosom of the mountains represent the vast plains of the deep.

Trees, in the climate of India, affect the port of plants, and plants in our gardens that of trees. A multitude of flowers seem to be modelled after the rose and the lily. Among domestic animals the cat appears formed after the tiger, the dog after the wolf, the sheep after the camel. Every species has its correspondent, man only excepted. That of monkies, which some would make a variety of the human species, has relations much more direct to other animals. The man of the woods, with his long arms, his slender legs, his fleshless paws, his round eyes, his shaggy hide, certainly bears a very imperfect resemblance to the Apollo of Vatican; and whatever inclination we might have to reduce man to the level of the beast, it would be difficult to find, in the female of that animal, a second model of the human figure, which should come near the Venus de Medicis, or the Diana of Alegrain, which is shewn at Lucienne. But I have seen monkies which had a strong resemblance to the bear, as the bavian of the Cape of Good Hope, or to the greyhound, as the maki of Madagascar. Some of them are formed like little lions; such is a very handsome white species, with a mane, found in Brasil. I presume that most species of quadrupeds, especially of the ferocious kinds, have their counterparts in the tribes of monkies. The same correspondences are likewise discovered in the numerous varieties of parrots, which in their forms, their bills, their claws, their scream, and and their sports resemble most of the birds of prey. Finally, they extend even to the plants, for this reason denominated, *mimosæ*, which represent, in their flowers and the aggregation of their seeds, insects and reptiles, as snails, flies, caterpillars, lizards, scorpions, &c. In forming these correspondences Nature must have had some intention, that is unknown to me. It is very remarkable, that they are common only between the tropics, where the forests swarm

with every species of the monkey and the parrot tribes. Perhaps she meant to exhibit, under innocent forms, those of the noxious animals, which are there very numerous; to expose to the light of day the terrible figure of those sons of night and of carnage, and designed that none of her works should remain concealed in the gloom of night, from the eyes of man. Be this as it may, no animal on the face of the earth is formed on the noble proportions of the human figure; and though man is frequently degraded by his passions to the level of the beasts, yet his restlessness, his intelligence, and his sublime affections sufficiently demonstrate, that he is himself the counterpart of the Deity.

Finally, the spheres of all beings have a communication, by means of the rays which seem to unite their extremities. We shall remark in the stallactities and the crystallizations of fossils, processes of vegetation; and I think we may even perceive the movement of animals in that of their counterparts. On the other hand, we shall observe plants forming themselves, after the manner of fossils, without any apparent organization; such, among others, is the truffle, which has neither leaves, nor flowers, nor roots. Others represent in their flowers the figure of animals, as the plants belonging to the species of orchis; or their sensibility as the sensitive plant, which droops and contracts its leaves at the slightest touch; or their instinct, as the *dionœa muscipula* which catches flies. The small leaves of this plant, placed opposite to each other, are impregnated with a saccharine substance, which attracts the flies; but, as soon as they alight, these little leaves suddenly close, like the jaws of a rat-trap, and pierce them with their prickly edges. There are others still more astonishing, as having within themselves the principles of motion; such is the *hedysarum movens*, or *burum chandali* brought some years ago from Bengal to England. This plant moves alternately, the two pendent lobes which accompany its leaves, though no exterior and apparent cause contributes to this

kind of oscillation. But without going so far in quest of wonders, we shall perhaps, find some still more surprising in our gardens. We shall see the pea push out tendrils precisely at the height when it begins to stand in need of support, and curl them round the sticks with an address which cannot be ascribed to accident. These relations seem to argue intelligence: but we shall find others still more amiable, that are a demonstration of goodness, not only in the vegetable but likewise in the hand which formed it. The sylphium of our gardens is a large, ferulaceous plant, resembling, on the first glance, that known by the name of sunflower. Its capacious leaves are opposed at their base, and their cavities uniting, form an oval cup, in which the rain-water collects to the quantity of a large glassful. They are placed in stories, not in the same direction, but at right angles, in order to catch the rain-water that falls on the whole extent of their circumference. Its square stem is very commodious for being firmly seized by the claws of birds; and its flowers produce seeds, of which many of them, and particularly the thrush, are extremely fond. Thus this whole plant, like the perch of a parrot's cage, affords at once to the birds, a resting-place, meat, and drink.

We shall, likewise, speak of the smell and of the taste of plants. We shall remark, under these relations, a great number of botanical characters which are not the least certain. It was from their smell and taste that man acquired the first knowledge of their poisonous, medicinal or nutritive qualities. The very sounds of plants are not to be overlooked: for, when agitated by the winds, most of them emit sounds peculiar to themselves, and which produce highly agreeable harmonies or contrasts with the situations in which they are accustomed to grow. In India, the hollow canes of the bamboo which shade the banks of the rivers, imitate, as they rustle against each other, the sound of the working of a ship; and the pods of the cinnamon, agitated by the winds on the summit of a mountain, the clack of a mill. The moveable leaves of the poplar

convey to the ear, in the midst of the forest, the babbling of the brooks. The verdant meads and the calm forests fanned by the zephyrs, represent, in the depths of the valleys and on the sides of the hills, the undulations and the murmurs of the waves of the sea, breaking against the shore. The early inhabitants of the globe, struck with these mysterious sounds, imagined that they heard oracles issue from the trunks of the oaks, and that the Nymphs and Dryads, enclosed in their rugged bark, inhabited the mountains of Dodona.

The sphere of animals extends still further its wonderful harmonies. From the motionless shell-fish, which pave and strengthen the bed of ocean, to the fly that wings its nocturnal course through the plains of the torrid zone, glittering like a radiant meteor, you will find in them the configurations of rocks, of vegetables, and of stars. A thousand passions, a thousand ineffable instincts animate them, and are expressed in songs, in cries, in hummings, and even in the articulate sounds of the human voice. Some compose turbulent republics, others live in profound solitude. Some pass their whole lives in waging war, others in making love. In their combats they use every imaginable kind of armor, and every possible method of employing it, from the porcupine that darts his arrows, to the torpedo, that, like electricity, strikes an invisible blow. Their loves are not less varied than their enmities. One must have a seraglio; another is satisfied with a transient mistress; a third is united to a faithful companion whom he never abandons till separated by death. Man combines in his enjoyments their pleasures and their transports, and when satiated with them, he sighs and demands of heaven another kind of felicity. We shall examine, by the mere light of reason, whether man, subjected by his body to the state of animals, all whose necessities he unites in himself, is not, by his soul, allied to beings of a superior order; whether Nature, who has subjected the immensity of her productions on the earth, to a being naked, destitute, of

instinct, and who must undergo an apprenticeship of several years to learn only how to walk, has reduced him from his birth to the alternative of studying their qualities or of perishing; and whether she has not reserved to herself some extraordinary method of interposing for his relief, amid the evils of every kind that checker his existence, even among beings of the same species with himself.

In reviewing the transitions which unite the different kingdoms and extend their limits to regions yet unknown, we shall not adopt the opinion of those, who believe that the works of Nature, being the result of all possible combinations, must present every possible mode of existence. "You will there find order," say they, "and at the same time disorder. Transpose in an infinite variety of manners the characters of the alphabet, and you will form of them the Iliad and poems superior even to that production; but you will have, at the same time, an infinity of formless assemblages." We adopt this comparison, observing, however, that the supposition of the twenty-four letters of the alphabet embraces a previous idea of order, which it is necessary to admit, to establish even the hypothesis of chance. If then, the multiplied throw of these twenty-four letters would give an infinite number of poems good and bad, how many different modes of existing must be produced by the far more numerous principles of existence in itself, such as the elements, colds, surfaces, forms, depths and movements! Were we to take only one hundred modifications of each original combination of matter, we should have, at least, the general transitions of the different kingdoms. We should see plants walking with feet like animals; animals fixed in the earth by roots, like plants: rocks with eyes; herbs vegetating only in the air. The principal intervals of the spheres of existence would be filled. But all that is possible does not exist. Nothing exists but what is useful relatively to man. The same order that pervades the general system of the spheres, exists in the parts of each of the individuals which compose

them. There is not one, which has in its organs either redundancy or deficiency. Their harmonies are so sensible and possess characters so striking, that if you were to shew a skilful naturalist the representation of any plant or animal he had never seen, he would be able to decide, from the concordance of its parts, whether it was a creature of the imagination or a copy from Nature. One day the students in botany, wishing to put to the test the knowledge of the celebrated Bernard de Jussieu, presented to him a plant not in the collection belonging to the garden of the museum, requesting him to determine its genus and species. The moment he cast his eyes on it he said: "This plant is an artificial composition; you have taken the leaves of one, the stalks of another, and the flowers of a third. This was the fact. They had, however, selected with the utmost art, the parts of such as had the greatest analogy. I can venture to affirm, that, by the method which I shall propose, the science may be carried much farther, and we shall be enabled to determine at the sight of an unknown plant, the nature of the soil in which it grew; whether it is a native of a hot or a cold country, whether it inhabits the mountain or the stream; and perhaps even the species of animals to which it is particularly allied.

In studying these laws, most of which are unknown or neglected, we shall overthrow others founded only on particular observations that have been too much generalized. Such are, for example, the following: that the number and fecundity of beings are in an inverse ratio to their size, and that the time of their decay is in proportion to that of their growth. We shall shew that there are mosses less prolific than the fir, and shell-fish less numerous than whales: such, among others, is the hammer fish. There are animals whose growth is very rapid and whose decay is very slow: this is the case with most fishes. We shall prove, that the duration, the strength, the size, the fecundity, the form of every being, are admirably

adapted not only to its individual happiness, but to the general happiness of all, whence results that of mankind.

We shall likewise destroy those analogies, so commonly admitted, which are deduced from the soil and the climate, in order to explain all the operations of Nature by mechanical causes, by demonstrating that she frequently produces vegetables and animals whose qualities are diametrically opposite to them. The tubulous and driest plants, as reeds and rushes, as well as the birch, whose bark, like leather soaked in oil, is incorruptible by humidity, grow on the banks of streams like boats provided for crossing over. On the contrary, the plants that are the most humid and have the richest juices, grow in the driest situations; such are the aloe, the wax-tree of Peru, and the liane impregnated with water, which are found only on the arid rocks of the torrid zone, where they are placed like vegetable fountains. The very instincts of animals appear to be less adapted to their personal utility, than to that of man, and are sometimes in harmony with the nature of the soil they inhabit, and sometimes in opposition to it. The gluttonous hog delights to live in the mire, from which he is destined to purify the habitation of man: and the sober camel to traverse the burning sands of Africa impervious, but for him, to the footsteps of the traveller. The appetites of these animals do not grow out of the places they inhabit; for the ostrich, who is a tenant of the same deserts as the camel, is still more voracious than the hog. The world is governed by no one law of magnetism, of gravity, of attraction, of electricity, of heat, or of cold. These pretended general laws are nothing more than particular means. Our sciences deceive us, by ascribing to Nature a false providence. They place, it is true, a balance in her hands, but not the balance of justice; it is only that of commerce. They weigh nothing but the salts and the masses, and put aside wisdom, intelligence and goodness. They are not afraid of excluding from the heart of man the sense of his divine qualities, which

inspires him with such energy, and of accumulating on his mind weights and movements that oppress him. They place in opposition the squares of times and of velocities, and they neglect to notice those wonderful compensations with which Nature has interposed for the relief of every being, having bestowed the most ingenious on the weakest, the most abundant on the poorest, and having united them all in the human race, undoubtedly as being the most wretched species of all.

We can know nothing but that of which Nature makes us sensible, and we can form no judgement of her works, but in the place and at the time she pleases to display them. All that we imagine beyond this, presents only contradiction, doubt, error and absurdity. From this description I except not even the plans of perfection which we conceive. For example, it is a tradition common to all nations, supported by the testimony of the sacred writings, and grounded on a natural sentiment, that man has lived in a better order of things, and that he is destined for a state which is to surpass it. We cannot, however, say any thing either of the one or of the other. It is impossible for us to retrench from that in which we live, or to add to it, without rendering our condition worse than it is. All that Nature has attached to it is necessary. Even pain and death are testimonies of her goodness. But for pain, we should bruise ourselves at every step without perceiving it. But for death, new beings could not be called into existence; and supposing those which already exist could be rendered eternal, that eternity would involve in it the ruin of generations, the configuration of the sexes, and all the relations of conjugal, filial and parental affection, that is, the whole system of present happiness. In vain we seek in our cradles the archives which the tomb denies us: the past, like the future, shrouds our mysterious destiny in an impenetrable veil. In vain we employ the light that illumines us, and search, in the origin of things, for the weights, the times and the mea-

sures which we find in their enjoyment: but the order that produced them has, with relation to God, neither time nor weight, nor measure. The divisions of matter and of time were made only for circumscribed, feeble and transient man. The universe, said Newton, was produced at a single cast. We seek youth in what was always old, and old age in what is ever young, germs in species, births in generations, epochs in Nature; but when the sphere, in which we live, issued from the hand of its divine author, all times, all ages, all proportions manifested themselves in it at once. In order that Etna might vomit forth its fires, the construction of its furnaces required the provision of lavas that had never before flowed. In order that the Amazonian river might roll its waters across America, it was necessary, that the Andes of Peru should be covered with snows, which no winds of the east had yet accumulated. In the bosom of the new-created forests ancient trees must have sprung, that the insects and the birds might find their proper nourishment under their aged bark. Carrion must have been created for the carnivorous animals. In all the kingdoms of Nature must have been produced beings young, old, living, dying and dead. All the parts of the immense fabric appeared at once, and if it had a scaffold, it has disappeared from our sight.

Let others extend the limits of our sciences, I shall think it a much greater service if I can fix those of our ignorance. Our understanding, like our virtue, consists in descending, and our strength in the sense of our weakness. If I do not follow the track which Nature has reserved for herself, I shall at least walk in the path which man ought to take. It is the only one that presents to him easy observations useful discoveries, enjoyments of every description, without instruments, without a cabinet, without metaphysics, and without a system.

To convince ourselves how agreeable it is, let us arrange, according to our method, some group with the sites, the vegetables and the animals most common in our climates

Let us suppose a soil the most ungrateful, a rock on our coasts, at the mouth of some river, presenting a steep towards the sea and a gentle declivity towards the land; that, on the side next the sea, the billows cover with foam its rocks clothed with sea-weed, fuci and algæ, of every color and of every form, green, brown, purple, in tufts and in garlands, as I have seen on the coasts of Normandy, affixed to the rocks of white marl which the sea detaches from its shores. Let us farther suppose, that, on the other side towards the river, we see, on its yellow sands, a scanty verdure, interspersed with a little trefoil and here and there a tuft of marine wormwood. Let us introduce some willows, not like those of our meadows, but which retain their natural growth and resemble those I have seen on the banks of the Spree, in the vicinity of Berlin, with bushy tops and rising to the height of above fifty feet. Let us not forget, in this disposition, the harmony of different ages so agreeable to the eye in every species of aggregation, but particularly in that of vegetables Let us observe among those willows so smooth and full o moisture, some shooting their young branches into the air and others with pendent tops and trunks hollowed by age Let us add to these their concomitant plants, such as the green moss and the golden lichen that marble their grey rind, the convolvulus, vulgarly called lady's-smock, which delights to climb up their trunks and to decorate their branches, which have no apparent flowers of their own, with its leaves in the form of a heart, and its flowers like bells as white as snow. Let us place on them the inhabitants natural to the willow and its plants, their flies, their scarabei and other insects, and the winged animals that make war upon them, as the dragon-fly, smooth as burnished steel, which catches them in the air; the wagtail which pursues them on the land, making the movement from which she derives her name; and the king-fisher which takes them on the surface of the water: and you will see a multitude of agreeable harmonies arising from one single species of tree

They are, however, still imperfect. To the willow let us oppose the alder, which, like the former, delights to inhabit the banks of rivers, and which, by its form, resembling that of a high tower, its broad foliage, its dusky green, its thick roots, formed like cords that run along the banks and bind together the soil, forms a perfect contrast with the wide-extended mass, the small leaves, the whitish verdure and the pivot-like roots of the willow. Let us add to this the individuals of the alder of different ages, rising like so many verdant obelisks, with their parasitical plants, as the maiden's-hair, spreading in stars of verdure over the humid trunk, the long scolopendria hanging from the boughs down to the ground, and the other accessories of insects, birds and even quadrupeds, whose figures, colors, attitudes and instincts, probably, form contrasts with those of the willow; and we shall have, with these two kinds of trees only, a delightful concert of vegetables and animals. If we illumine these groves with the first rays of Aurora, we shall behold at once deep and transparent shades diffused over the turf, a dusky and a silvery verdure intermingled with the azure of the heavens, and their soft reflections, blended together, moving in the bosom of the waters. Let us farther suppose what neither painting nor poesy can express, the odour of the plants and even the smell of the sea, the rustling of the leaves, the buzzing of insects, the matin songs of the birds, the hollow, murmuring noise, interrupted by intervals of silence, of the billows that break against the shore, and the repetitions of all these sounds by the distant echoes, which, losing themselves in the sea, resemble the voices of the Nereids—ah! if the love of philosophy transports you into this solitude, you will find it an asylum more delicious than the palaces of kings.

Would you wish that sensations of another order should be excited? Would you wish that the voice of passion and sentiment should burst from the bosom of rocks? Let the tomb of a virtuous and unfortunate man start up beneath

the shade of the willows, presenting this inscription: Here rests J. J. Rousseau. Would you strengthen the impression of this picture, without doing violence to Nature, as far as regards the subject? Change the time, the place, the monument. Let this isle be Lemnos, the trees of its groves, the laurel and wild olive, and let this tomb be the tomb of Philoctetes. Let us there discover the grotto, where that great man lived abandoned by the Greeks, whose battles he had fought; his wooden pot, the rags that covered him, the bow and arrow of Hercules, which, in his hands, had destroyed so many monsters, and with which he wounded himself; and we shall be impressed at once with two powerful sensations, the one physical, which encreases in proportion as we approach the works of Nature, because their beauty is displayed only to the eye that examines them; the other moral, which gains strength in proportion as we retire from the monuments of virtue, because to do good to men, and to be no longer within their reach, is a resemblance to the Deity.

What then would it be, were we to take a glance of the general harmonies of the globe? To dwell only on those which are best known to us, look how the sun constantly encircles with his rays one half of the earth, while the other is covered with the shades of night. How many contrasts and harmonies result from their ever-varying oppositions! There is not a point of the two hemispheres, in which there does not appear, by turns, a dawn, a twilight, an aurora, a noon, a western sky tinged with fire, and a night, sometimes studded with stars, sometimes clothed in a sable mantle. The seasons go hand-in-hand like the hours of the day. The spring, crowned with flowers, precedes the sun's flaming car, summer surrounds it with her golden sheaves, and autumn follows, bearing her cornucopia filled with fruits. In vain winter and night, retiring to the poles of the world, attempt to set bounds to his majestic career; in vain they arise from the bosom of northern and southern seas, and new continents

which have their vallies, their mountains, and their brilliant coruscations; the father of day, with his fiery shafts, overturns the fantastic fabric, and, without quitting his throne, resumes the empire of the universe. Nothing can escape his prolific heat. From the bosom of Ocean he raises into the air the rivers that are to flow through the two hemispheres. He orders the winds to distribute them over the islands and the continents. These invisible children of the air transport them under a thousand capricious forms. Sometimes they spread them over the face of heaven like veils of gold, or streamers of silk; sometimes they roll them along in the form of frightful dragons and roaring lions, vomiting forth fire and thunder. They shed them over the mountains in as many different ways, in dews, in rain, in hail, in snow, in impetuous torrents. However capricious their services may appear, every part of the earth annually receives from them no more than its accustomed portion of water. Every river fills his urn, and every Naiad her shell. In their progress they display, on the liquid plain of the sea, the variety of their characters. Some scarcely ruffle the smooth expanse; others plough it in azure billows; others turn it up from the bottom with a tremendous noise, and cover the lofty promontories with its spray. Every place possesses harmonies peculiar to itself, and every spot presents them in its turn. Run over any meridian or parallel you please, you will find in it mountains of ice and mountains of fire; plains of every kind of level, hills of every curve, islands of every form, rivers of all currents; some spouting up, as if they had issued from the centre of the earth, others precipitating themselves in cataracts, as if they descended from the clouds. Nevertheless, this globe, agitated by so many movements, and loaded with burdens apparently so irregular, advances with a steady and unalterable course amid the immensity of the heavens.

Beauties of another order decorate its architecture, and render it habitable to sensible beings. A girdle of palm-

trees, from which are suspended the date and the cocoa-nut, surrounds it between the burning tropics, and forests of mossy firs crown it beneath the polar circles. Other vegetables, extend like radii, from south to north, and disappear at different latitudes. The banana advances from the Line to the shores of the Mediterranean. The orange crosses that sea, and tinges with its golden fruit the southern coasts of Europe. The most necessary, as corn and grasses, penetrate the farthest, and strong in their weakness, stretch, under the shelter of the vallies, from the banks of the Ganges to the shores of the Frozen Ocean. Others, more hardy, departing from the rude climates of the north, advance over the summits of Taurus, and, favored by the snows, make their way into the very bosom of the torrid zone. The fir and the cedar crown the mountains of Arabia and the kingdom of Cashmir, and view at their feet the burning plains of Aden and Lahor, which produce the date and the sugar-cane. Other trees equally averse to heat and cold, have their centre in the temperate zones The vine languishes in Germany and Senegal. The apple, the tree of my native land, never beheld the sun vertical over its head, or describing around it the entire circle of the horizon, to ripen its beautiful fruit. But every soil has its Flora and its Pomona. The rocks, the morasses, the mud, the sands have vegetables which are peculiar to each. The very hollows of the sea are fertile. The cocoa-tree thrives only on the beach, and suspends its milky fruit over the briny billows. Other plants are adapted to the winds, the seasons and the hours of the day, with such precision, that Linnæus formed with them botanical almanacs and time-pieces. Who can describe the infinite variety of their figure? What bowers, arches, avenues, pyramids of verdure, loaded with fruits, present the most enchanting habitations! What happy republics live beneath their peaceful shades! What delicious banquets are there prepared! Nothing of them is lost. The quadrupeds crop the tender . . the birds eat the seeds, and

the other animals the roots and the bark. The insects feed on what is left; their infinite legions are armed with instruments of every kind for collecting it. The bees carry on their thighs spoons furnished with hair to pick up the powder of their flowers; the flies have pumps to suck the sap; the worms are provided with augres, wimbles and rasps to separate the solid parts, and the ants have pincers to carry off the crumbs. By the diversity of form, of manners, of governments, and the perpetual wars of all these animals, you would suppose them a multitude of foreign and hostile nations who would soon destroy each other. From their constancy in love, the perpetuity of their species, and their admirable harmony with all the parts of the vegetable kingdom, you would imagine them to be a single people, which has its hereditary nobility, its carpenters, its pump-makers, and its artisans.

Other tribes, despising vegetables, are adapted to the elements, to day, to night, to tempests, and to the different parts of the globe. The eagle confides her nest to the rock, which is lost in the clouds; the ostrich to the burning sands of the desert; and the rose-colored flamingo to the mud of the southern ocean. The white bird of the tropics and the black man-of-war bird, delight to sweep in company over the expansive bosom of the ocean, to behold, from the lofty regions of the atmosphere, the fleets of India sailing beneath them, and to encircle the globe from east to west, rivalling in rapidity the course of the sun himself. In the same latitude, the turtle-dove and parrot, less daring, travel only from island to island, with their young ones in their train, picking up in their forests the seeds of the spice-trees which they shake down from branch to branch. While these birds preserve an equal temperature under the same latitudes, others find it by following the same meridian. Long triangles of wild geese and swans go and come every year from south to north, stopping only at the hoary limits of winter. They pass without astonishment over the populous cities of

Europe, and look down with disdain on their fertile fields, which present furrows of green corn even in the midst of snow; so much does liberty appear preferable to abundance, even in the eyes of animals! On the other hand, legions of heavy quails cross the sea, and seek in southern climates the heat of summer. Toward the end of September, they avail themselves of a north wind to take their departure from Europe, and flapping one wing, while they present the other to the wind, half sail and half oar, they graze the waves of the Mediterranean with their fattened rumps, and repair to the sands of Africa, to serve for food to the famished inhabitants of Zara. There are animals which travel only in the night. In the Antilles, millions of crabs descend from the mountains by moon-light, clashing their claws, and present to the Caraibs on the sterile strand of those islands, their shells filled with the most delicious marrow. In other seasons, on the contrary, the tortoise quits the sea, to land on the same shores, to deposit clusters of eggs in their burning sands. The very ices of the poles are inhabited. In their seas, and under their floating promontories of crystal, we find the black whale, containing a greater quantity of oil than a whole field of olives could produce. Foxes, clothed in precious furs, procure a subsistence on their shores, abandoned by the sun; herds of rein-deer there scratch up the snow in quest of moss, and advance, braying, into the desolate regions of night, by the glimmer of the *aurora borealis*. By an admirable dispensation of Providence, places the most barren, present to man in the greatest abundance, provisions, clothing, lamps and fuel not of their own production.

How delightful would it be to see the human race collecting all these blessings, and communicating them in peace from one climate to another! We expect every winter that the swallow and the nightingale will announce to us the return of the serene season. It would be much more affecting to behold distant nations arrive, with the spring, on our shores, not with the noise of artillery, like

the modern Europeans, but with the sound of the flute and of the hautboy, like the ancient navigators in the early ages of the world. We should see the black Indians of Southern Asia ascending, as formerly, up their mighty rivers in canoes of leather, penetrating by the waters of the Petzora to the extremities of the north, and distributing, on the shores of the Frozen Ocean, the riches of the Ganges. We should behold the copper-coloured Indians of America visiting, in their hollowed trunks, the extended chain of the Antilles, proceeding from isle to isle, from shore to shore, and perhaps bringing even to our continent their gold and their emeralds. Numerous caravans of Arabs mounted on camels and on oxen, would follow the course of the sun, from pasture to pasture, recalling to our memory the innocent and happy lives of the ancient patriarchs. Winter itself would be no obstacle to the communication of nations. Laplanders, covered with warm furs, would arrive, by favor of the snow, in their sledges, drawn by rein-deer, and would supply our markets with the sable-skins of Siberia. If mankind lived in peace, every sea would be navigated, every region explored, and all their productions would be collected. What a gratification to curiosity would it be to listen to the narrative of the adventures of these foreign travellers, attracted to us by the gentleness of our manners! They would not fail to communicate to us, in return for our hospitality, the secrets of their plants, of their industry, of their traditions, which they will ever conceal from our ambitious commerce. It is among the members of the vast family of the human race that the fragments of its history are scattered. How interesting would it be to learn that of our ancient separation, the motives which induced each tribe to disperse over an unknown globe, to traverse, as chance directed, trackless mountains and rivers that had not yet received a name! What pictures would be presented by the description of those regions decorated with pompous magnificence, as they proceeded from the hands of Nature,

but wild and not adapted to the necessities of man without experience! They would paint to us the astonishment of their ancestors at the sight of the new plants which every new climate offered for their use; the trials they made of of them as the means of subsistence; how they were aided, no doubt, in their necessities and in their industry, by some celestial intelligence who commisserated their distress; how they formed establishments; what was the origin of their laws, of their customs, and of their religions. What acts of virtue, what instances of generous love have ennobled deserts, and are unknown to our pride! We flatter ourselves, because we possess a few anecdotes pick ed up at random by travellers, that we have obtained a thorough insight into the history of nations. But this is the same as if they were to compose ours from the tales of a mariner or the artificial recital of a courtier, amidst the jealousies of war or the corruptions of commerce. The knowledge and the sentiments of a nation are not comprised in books; they are preserved in the heads and in the hearts of its sages, if it be possible that Truth can find on earth a secure asylum. We have been sufficiently engaged in passing judgment on them: it would be more interesting for us to be judged by them, in our turn, and also to witness their surprize at the sight of our customs, of our sciences, and of our arts. If it be delightful to acquire knowledge, it is still more delightful to diffuse it. The noblest reward of science is the pleasure of the ignorant man instructed. What a gratification would it be to us to partake of their joy, to behold their dances in our public places, to hear the drum of the Tartar, and the ivory horn of the Negro, re-echo round the statues of our kings! Ah! if we were good, I figure them to myself, struck with the excessive and fatal populousness of our cities, inviting us to spread ourselves over their solitudes, to contract marriages with them, and by new alliances to unite the branches of the human race, which are separating farther and farther, and which national passions divide still more than age and climates.

Blessings were given us in common, and we, alas! have anticipated only in the evils of life. Man is every where complaining of the want of land, and yet the globe is covered with deserts. Man alone is exposed to famine, while even the insects revel in abundance. Almost every where he is the slave of his equal, while the feeblest animals have maintained their liberty against the strongest. Nature, who formed him for love, refused him arms, and he forged them for himself to combat his fellows. She presents to all her children secure retreats and joyous festivals; but the avenues of our cities are announced at a distance by wheels and by gibbets. The history of Nature exhibits only blessings, that of man nothing but rapine and madness. His heroes are those who have rendered themselves the most formidable. He every where despises the hand that spins the garment he wears, and that cultivates for him the bosom of the earth. He every where esteems those who deceive, and reveres those who oppress him. Ever dissatisfied with the present, he is the only being that regrets the past and dreads the future. To him alone Nature granted the knowledge of a Deity, and thousands of inhuman religions sprung from a sentiment so simple and so consolatory. What then is the power which has opposed obstacles to that of Nature? What illusion has misled that wonderful reason, which has invented so many arts, but not that of being happy? O legislators! boast not of your laws. Either man is born to be miserable, or the earth, every where bathed with his blood and his tears, accuses you of having misunderstood those of Nature.

He who does not adapt himself to his country, his country to mankind, and mankind to God, is no better acquainted with the laws of politics, than he, who, forming a system of physics for himself alone, and separating his personal relations from all connection with the elements, the earth and the sun, can be acquainted with the laws of Nature. To the investigation of these divine harmonies I

have devoted my life and this work. If, like so many others, I have gone astray, my errors, at least, will not be fatal to my religion. That alone appears to me to be the natural bond of mankind, the hope of our sublime passions, and the complement of our miserable destiny. Happy shall I think myself, if I have been able to prop, with my feeble support, its wonderful edifice, shaken, in these days, on every side! But its foundations rest not on the earth, it is to heaven that its stately columns are attached. However bold may be some of my speculations, there is nothing in them for the wicked. But, perhaps, more than one epicurean will there discover, that supreme pleasure consists in virtue. Good citizens will perhaps find in them new means of being useful. I shall, at least, be fully compensated for my labours, if but one unhappy wretch, dejected by the melancholy spectacle of the world, shall derive consolation from beholding, in Nature, a father, a friend, and a rewarder.

Such is the vast plan I proposed to execute. For this purpose I had collected more materials than I wanted; but various obstacles prevented me from arranging the whole of them. I shall, perhaps, resume the occupation in happier times. I have meanwhile selected sufficient to give an idea of the harmonies of Nature. Though my labours are here reduced to simple studies, I have, however, preserved in them so much order as was necessary to unfold my original plan. Thus a peristyle, half-ruined arcades, avenues of columns, and bare walls still present to travellers, in an island of Greece, the image of an ancient temple, in spite of the ravages of time, and of the barbarians by whom it was demolished.

At setting out, I change scarcely any thing in the first part of my work, excepting the arrangement. I display in the first place, the benefits of Nature to our age, and the objections that have been made to the providence of her Author. I, then, reply successively to those raised from the confusion of the elements, of the vegetables, of

the animals, of man, and to those levelled at the nature of God himself. I may venture to affirm that I have treated these subjects without any personal or extraneous consideration. Having replied to those objections, I propose some, in my turn, to the elements of our sciences, which we deem infallible, and I combat that pretended principle of our knowledge, which we call Reason.

After clearing the ground of our opinions in my first studies, I endeavour, in those that follow, to rear the fabric of our knowledge. I examine at what portion of our intelligence the light of Nature fixes its limits, what we understand by beauty, order, virtue and their contraries. I hence deduce the evidence of several physical and moral laws, the sentiment of which is universal among all the nations of the globe. I then apply the physical laws, not to the order of the earth, but to that of plants.

I long hesitated, I acknowledge, between those two orders. The first would, I am confident, have exhibited relations entirely new, useful to navigation, to commerce, and to geography; but the second has presented others equally novel, equally agreeable, more easily demonstrable to the generality of readers, of high importance to agriculture, and consequently to a greater number of men. Besides, some of the harmonic relations of the globe are displayed in my replies to the objections against Providence, and in the elementary relations of plants, in a manner sufficiently explicit to prove the existence of this new order. The vegetable order has, moreover, furnished me an occasion to treat of the relations of the globe which extend directly to animals and to men, and even to take some notice of the earliest voyages of the human race to the principal parts of the world.

In the following study I apply the laws of Nature to man, to establish proofs of the immortality of the soul, and the existence of the Deity, not on the principles of reason which so often leads us astray, but on an innate feeling which never deceives. To these laws, physica. and moral,

I refer the origin of our predominant passions, love and ambition, and even the causes which interrupt our enjoyments, which render our pleasures so transient, and our melancholy so profound. I flatter myself that these proofs will interest both by their novelty and their simplicity.

I afterwards proceed from these notions to propose the remedies, or the palliatives adapted to the ills of society, the representation of which I have before delineated. It has been my wish not to imitate most of our moralists, who content themselves with lashing our vices, or with turning them into ridicule, without assigning either the principal causes or the remedies; still less shall I take a pattern from our modern politicians, who foment in order that they may take advantage of them. I hope that in this last study, which has been a most agreeable one to myself, will be found more than one hint beneficial to my country.

The rich and the great imagine, that every one is miserable and out of the world, who does not live like themselves; but they are the persons, who, living far from nature, live out of the world. They would find thee, O eternal Beauty! always ancient and always new.* O Life, pure and blissful of all those who truly live, if they only seek thee within themselves! Wert thou a mass of gold, or a victorious king who shall not be alive to-morrow, or some attractive and deceitful female, they would perceive thee, and would ascribe to thee the power of affording some pleasure. Thy vain Nature would then employ their vanity. Thou wouldst be an object adapted to their timid and grovelling thoughts. But because thou art too much within themselves, where they never chuse to look, and too magnificent without, diffusing thyself through infinite space, thou art to them an unknown God.* In losing themselves they have lost thee. The order, and

* See Augustine's City of God.

* Fenelon on the existence of God.

even the beauty which thou hast dispensed to all thy creatures as steps by which man may raise himself to thee, are transformed into veils that conceal thee from their sickly eyes. They have no sight but for shadows. The light dazzles them. Mere nothings are to them every thing, and all-perfection passes with them for nothing. But he who never saw thee, has seen nothing; he who has no relish for thee, never tasted pleasure; he is as though he did not exist, and his whole life is only a miserable dream. I myself, O my God! misled by a faulty education, have sought a vain felicity in systems of science, in arms, in the favor of the great, sometimes in frivolous and dangerous pleasures. In all these agitations I pursued misery, while happiness was within my reach. At distance from my native land, I sighed for enjoyment which it contained not for me, and yet thou wast bestowing on me blessings innumerable, diffused by thee over the whole earth which is the country of mankind. I was uneasy to think that I was not patronized by any great man or body of men, and by thee I was protected in a thousand dangers, in which they could have rendered me no assistance. It grieved me to live solitary and unnoticed; and thou hast taught me that solitude is preferable to the life of a court, and liberty to grandeur. It caused me many a painful reflection, that I had not found a spouse to be the partner of my life and the object of my love, thy wisdom invited me to walk to meet her, and discovered to me in each of her productions an immortal Venus. I never ceased to be happy, but when I ceased to trust in thee. O my God! give to these labors of a mortal, I do not say the duration or the spirit of life, but the freshness of the least of thy works. Let their divine graces be transfused into my writings, and bring back the age in which I live to thee, as by them I have myself been brought back. Opposed to thee, all power is weakness; supported by thee weakness becomes strength. When the rude blasts of the north have ravaged the earth,

thou callest the feeblest of the winds. At thy voice the zephyr breathes, the verdure revives, the gentle primrose and the humble violet cover with purple and gold the bosom of the sable rock.

STUDY II

BENEFICENCE OF NATURE.

Most men in civilized nations look upon Nature with indifference. They are in the midst of her works, and they admire only human grandeur. What, then, can render the history of man so interesting? It boasts only of vain objects of glory, of uncertain opinions, of bloody victories, or, at most, of useful labors. If Nature is sometimes mentioned, it is only to call our attention to the ravages she has committed, and to ascribe to her calamities, which almost invariably proceed from our own imprudence. With what assiduity, on the contrary, does this common mother provide the means of our felicity! She has diffused her blessings from pole to pole, only to induce us to unite in the mutual communication of them. Notwitstanding the prejudices which divide us, she is incessantly recalling us to the universal laws of justice and of humanity, by frequently putting our ills into the hands of conquerors, so highly vaunted, and our pleasures into those of the oppressed, on whom we scarcely deign to bestow even our pity. When the princes of Europe had been, with the gospel in their hands, to ravage Asia, they brought back with them the plague, the leprosy, and the small-pox; but Nature pointed out to a dervise, the coffee-tree, in the mountains of Yemen, and produced, at th

same time, our scourges from our crusades, and our delicious beverage from the cup of a Mahometan monk. The descendants of these princes subjugated America, and transmitted to us by this conquest, an inexhaustible succession of wars and venereal diseases. While they were exterminating the inhabitants by their artillery, a Caraib, in token of peace, gave the sailors his pipe to smoke; the perfume of the tobacco dissipated their cares, and the use of it was disseminated over the whole earth: and while the miseries of the two worlds issue from the mouth of cannon, which kings denominate ULTIMA RATIO,* the consolations of the civilized inhabitants of Europe flow from the pipe of a savage.

To whom are we indebted for the use of sugar, of chocolate, of so many agreeable means of subsistence, and of so many salutary medicines? To naked Indians, to poor peasants, to miserable negroes. The spade of slaves has done more good than the sword of conquerors has done mischief. But in which of our public places are the statues of our obscure benefactors? Our histories have not even deigned to record their names. Without going far, however, in quest of proofs of the obligations we owe to Nature, is it not to the study of her laws that Paris is indebted for its multiplied illumination, which is there collected from every quarter of the globe, which is combined in a thousand different ways, and is reflected over Europe in sciences the most ingenious, and in enjoyments of every description?

Where are the times when our forefathers leaped for joy at finding a wild plumb-tree on the banks of the Loire, or when they had caught a roe in the chace, in the vast plains of Normandy? Our fields, now so abundantly covered with harvests and orchards and flocks, did not then furnish the necessaries of life. They roved from

* *Ultima ratio regum*, was an inscription which one of the kings of France ordered to be engraved on the royal Artillery. T.

place to place, procuring by hunting a precarious subsistence, and not daring to trust to Nature. Her simplest phenomena filled them with terror. They trembled at the sight of an eclipse, of an *ignis fatuus*, of a branch of mistletoe on the oak. Not that they believed the affairs of the world to be abandoned to chance; no; they every where recognised intelligent deities; but not daring, under the influence of cruel priests, to believe them beneficent, these deluded people imagined, that they delighted only in fears, and immolated human victims on the very spot, perhaps where now stands an asylum for the wretched.*

Let us suppose that a philosopher, like Newton, were then to have furnished them with the spectacle of some of our natural sciences, to have shewn them with the microscope forests in mosses, mountains in grains of sand, thousands of animals in drops of water, and all the wonders of Nature, which, in her progress towards nothing, multiplies the resources of her intelligence, while the human eye is incapable of perceiving their limits; that, afterwards, displaying to them in the heavens, a progression of greatness equally infinite, he had shewn them among the planets,

* Some writers of modern times have highly extolled the Druids. Among other authorities, I shall oppose to them that of the Romans, who, it is well known, were extremely tolerant in matters of religion. Cæsar says in his Commentaries, that the Druids, in honor of the gods, burned men in baskets of osier, and that when criminals were wanting for this purpose, they sacrificed the innocent. Suetonius, in his Life of Claudius, says: "The religion of the Druids, too cruel, it must be confessed, and which, in the time of Augustus had been simply forbidden, was by him entirely abolished. Herodotus had, long before, advanced the same charges against them. All that can be opposed to the authority of three Roman emperors, and that of the father of history, is the evidence of the romance of Astræa. Have we not faults enough of our own, without undertaking to justify those of our ancestors? They were not, in fact, more culpable than other nations, who all sacrificed human victims to the Divinity. Plutarch reproaches the Romans themselves with having immolated, in the early times of the republic, two Greeks and two Gauls, whom they buried alive. Can it then be possible that the first sentiment of man in a state of Nature, should have been terror, and that he should have believed in the devil, before he believed in God? O no! It is man who has universally misled man. One of the benefits of the christian religion has been to destroy, in a great part of the world, these inhuman doctrines and sacrifices.

scarcely visible, worlds much greater than ours, Saturn at the distance of three hundred millions of leagues; among the fixed stars, infinitely more remote, suns which probably illumine other worlds; in the whiteness of the milky-way, stars, that is suns innumerable, besprinkled over the face of heaven, like grains of dust upon the earth, without man's knowing whether this may not be merely the threshold of the creation—with what transport would they have viewed a spectacle which we behold with indifference?

But I would rather suppose that, without the magic of our sciences, a man like the virtuous Fenelon had appeared among them, and had thus addressed the Druids: "You frighten yourselves with the terrors which you instil into the minds of the people. God is just. He sends among the wicked terrible opinions, which recoil on those by whom they are diffused. But he speaks to all men in the blessings he bestows. It is the principle of your religion to govern them by fear; mine draws them with cords of love, and imitates his sun, which he causes to shine on the evil and on the good."

If he had then distributed among them the simple presents of Nature, before unknown, sheaves of corn, plants of the vine, sheep covered with wool.—O! what would have been the gratitude of our forefathers! They would, perhaps, have fled affrighted from the inventor of the telescope, mistaking him for a spirit; but they would, undoubtedly, have worshipped the author of Telemachus.

These, however, are only the smallest part of the blessings for which their opulent descendants are indebted to Nature. I say nothing of that infinite number of arts, which are employed at home to procure them knowledge and delight, or of that terrible invention of artillery, which secures the enjoyment of them, while its noise disturbs their repose at Paris, only to announce victories; or of that new and still more wonderful art of electricity, which screens their mansions from the effects of light-

ning;* or of the privilege they possess in this venal age, of presiding, in all states, over the happiness of men, when they think they have nothing more to fear from the powers of earth and of heaven.

But the whole world is engaged only in the pursuit of pleasure. England, Spain, Italy, the Archipelago, Hungary, all Southern Europe, are every year adding wools to wools, wines to their wines, and silks to their silks. Asia sends them diamonds, spices, muslins, stuffs, and porcelain; America the gold and silver of her mountains, the emeralds of her rivers, the dying materials of her forests, the cochineal, the sugar-cane, the cocoa of her fervid plains, which the hands of their inhabitants did not cultivate; Africa her ivory, her gold, her very children, who serve them as beasts of burden all over the earth. There is not any portion of the globe, but what furnishes them with some article of enjoyment. The gulphs of the ocean supply

* On the subject of the effects of electricity, an idea extremely impious has been expressed in a Latin verse, the import of which is that man has disarmed the Deity. Lightning is not a particular instrument of Divine justice. It is necessary to the purification of the air in the heats of summer. God has permitted to man the occasional disposal of it, as he has given him the power of using fire, of crossing the ocean, and of employing every thing in Nature for his advantage. It is the mythology of the ancients, which, representing Jupiter always armed with thunder, has inspired us with so much terror. The Holy Scriptures contain ideas of the Divinity much more consolatory and a much sounder philosophy. I may be mistaken, but I think there is not a single passage in the bible in which lightning is mentioned as an instrument of divine justice. Sodom was destroyed by a shower of fire and brimstone. The ten plagues with which Egypt was afflicted were, the corruption of the waters, reptiles, lice, flies, the pestilence, ulcers, hail, locusts, thick darkness and the death of the first-born. Corah, Dathan, and Abiram were consumed by fire which issued from the earth. When the Israelites murmured in the wilderness of Paran, "the fire of the Lord burned among them, and consumed them that were in the uttermost parts of the camp." Numb. xi. 1. In the threatenings denounced against the people in Leviticus, no mention is made of lightning. On the contrary, it was amid the noise of thunder that the law, given by God to his people on Mount Sinai, was promulgated. Finally, in the sublime song in which Daniel calls on all the works of the Lord to praise him, he does not omit the lightning; and it is not foreign to the purpose to remark, that he includes in his invitation all the meteors which enter into the necessary harmony of the universe. He qualifies them with the majestic title of "the powers of the Lord." *See Apocrypha, Song of the Three Children.*

them with pearls, its rocks with ambergrease, and its ices with furs. In their native land, they have reduced mountains and rivers to a state of vassalage, in order to reserve for themselves feudal rights to fisheries and chaces; but there was no necessity to put themselves to so much expence. The sands of Africa, where they have no gamekeepers, send them clouds of quails and birds of passage, which cross the sea in spring to cover their tables in autumn. The north pole, where they have no cruisers, pours, every summer, upon their coasts, legions of mackarel, fresh cod and turbots, fattened in the long nights of the arctic regions. For them not only the birds and the fishes, but even the very trees, change their climate. Their orchards were formerly transplanted from Asia, as their parks now are from America. Instead of the chesnut and the walnut, which surrounded the farms of their vassals, in the rustic domains of their ancestors, the ebony, the service-tree of Canada, the pine of Virginia, the magnolia, the tulip-bearing laurel, encircle their country-seats with the umbrage of the new world, and almost with its solitudes. They have transported the jasmin from Arabia, the orange from China, the pine-apple from Brasil, and a multitude of perfumed plants from every region of the torrid zone. They no longer want their suns; they can dispose of latitudes. In their hot-houses they can convey the heats of Syria to exotic plants, in the very season when their vassals are exposed, in their hovels, to the rigors of the Alps. No one of the productions of Nature can escape them. What they cannot have while living they procure when dead. The insects, the birds, the shells, the minerals, nay the very soil of the most remote regions, fill their cabinets. Painting and engraving present them with their scenery, and afford them the enjoyment of the glaciers of Switzer- and during the burning heat of the dog-days, and of the spring of the Canaries in the midst of winter. Intrepid navigators bring them, from places to which the arts have not dared to penetrate, journals of voyages still more inter-

esting than pictures, and augment the tranquillity, the security and the silence of their nights, sometimes by a description of the tremendous tempests of Cape Horn, sometimes by that of the dances of the happy islanders of the South Seas.

Not only all things that actually exist, but even past ages, contribute to their felicity. It was not exclusively for the temples of Venus that Corinth invented those beautiful columns, rising like palm-trees; but, likewise to support the canopies of their beds. Their voluptuous art veils the light of day through taffeta of every color, and, imitating, by softened reflections, either moon-light or sun-rising, represents the objects of their loves as Dianas or Auroras. The art of Phidias has contrasted their beauties with the venerable busts of a Socrates and a Plato. Obscure scholars, by efforts which nothing can repay, have made them acquainted with the sublime geniuses, who were the ornaments of the world in times not far distant from its origin; Orpheus, Zoroaster, Esop, Lokman, David, Solomon, Confucius and a multitude of others unknown even to antiquity. It is no longer for the Greeks, it is for them that Homer still sings of heroes and of gods, and that Virgil warbles the notes of the Latin flute, which ravished the court of Augustus, and there re-kindled the love of country and of Nature. It is for them that Horace, Pope, Addison, Lafontaine, Gessner, have smoothed the rugged paths of wisdom, and have rendered them more accessible and more lovely than the treacherous precipices of folly. A multitude of poets and historians of all nations, a Sophocles, an Euripides, a Corneille, a Racine, a Shakspeare, a Tasso, a Xenophon, a Tacitus, a Plutarch, a Suetonius, introduce them into the very closets of those terrible sovereigns, that bruised with an iron sceptre the head of the nations with whose happiness they were entrusted, cause them to bless their tranquil destiny, and to hope for a still better under the reign of another Antonius. Those vast geniuses of all ages and of all countries, celebrating with

out concert, the everlasting lustre of virtue, and the Providence of heaven in the punishment of vice, add the authority of their sublime reason to the universal instinct of mankind, and multiply a thousand and a thousand times, in their favor, the hopes of another life, of longer duration and of more exalted felicity.

Ought not then a chorus of praise to ascend night and day from our habitations to the author of Nature? Never did ancient kings of Asia accumulate so many means of enjoyment at Susa or at Ecbatan, as our common tradesmen assemble in Paris. Yet, each day those monarchs paid adoration to the gods. They undertook no enterprize without consulting them, nor did they even sit down to table till they had offered them libations. Would to God, that our epicureans manifested nothing worse than indifference towards the hand which loads them with benefits! But it is from the very lap of plenty and delight that their murmurs against Providence now arise. From their libraries, stored with knowledge, issue black clouds, which have obscured the hopes, the virtues of Europe.

STUDY III.

OBJECTIONS AGAINST PROVIDENCE.

"THERE is no God," says these pretended sages. From the work, form your judgment of the workman.* Observe, in the first place, this globe of ours without proportion and without symmetry. Here it is deluged by vast seas, there it is destitute of water, and presents nothing but burning sands. A centrifugal force, occasioned by its

* See the replies of these objections, Study IV.

rotatory motion, has swelled out its equator into lofty mountains, while it has flattened the poles: for this globe was originally in a state of softness, whether it was a slime that issued from the bosom of the waters, or what is more probable, a scum detached from the sun. The volcanoes scattered over the whole earth demonstrate, that the fire which formed it still burns beneath our feet. Over this scoria, so badly levelled, rivers run as chance directs. Some inundate the plains, others are swallowed up, or precipitate themselves in cataracts, and none of them has any thing like a regular current. The islands are fragments of continents destroyed by the ocean, and the continent itself is but a mass of hardened mud. Here the unbridled deep devours its shores; there it abandons them, and exhibits new mountains which it has formed in the bosom of the billows. Amid the conflict of elements, this burned mass grows colder every day. The ices of the poles and of the lofty mountains encroach on the plains, and gradually extend the uniformity of an eternal winter on this globe of confusion, ravaged by the winds, the fire and the water.

"In the vegetable world reigns still greater disorder.* Plants are a fortuitous production of moist and dry, of heat and cold, a mere mould of the earth. The heat of the sun produces them, and they are destroyed by the cold of the poles. Their sap obeys the same mechanical laws, as the liquids in the thermometer and in capillary tubes. Dilated by heat, it ascends through the wood, descends again through the bark, and follows in its direction the vertical column of the air which impels it. Hence it is, that all vegetables rise perpendicularly and that the inclined plain of a mountain contains no more than the horizontal plane of its base, as geometry demonstrates. The earth itself is an ill-assorted garden, which every where presents nothing but useless plants or deadly poisons.

* The reply will be found in Study V.

"As to the animals, with which we are better acquainted, because they are allied to us by the same affections and the same wants, they exhibit still greater incongruities.* They were first produced by the expansive force of the earth during its infancy, and were formed out of the fermented slime of the ocean and the Nile, as we are assured by certain historians, and among the rest by Herodotus, who received his information from the priests of Egypt. Most of them are out of all proportion. Some have enormous heads and bills, as the toucan, others long necks and long legs like the crane. These are without feet, those have them by hundreds; the legs of some are disfigured by superfluous excrescences, such as the spurs attached to those of the hog, at the distance of some inches from his feet, which can be of no service to him in walking. Some animals are scarcely capable of motion, and come into the world paralytic, as the sluggard or sloth, which cannot go more than fifty paces in a day, and, as it walks, utters the most lamentable cries. Our cabinets of natural history are filled with monsters; bodies with two heads, heads with three eyes, sheep with six legs, &c. which prove that Nature acts at random, and proposes to herself no end, unless it be that of combining all possible forms; and, after all, this plan would denote an intention which her monotany disavows. Our painters will always imagine many more beings than she is capable of creating. Besides rage and fury desolate all that breathes, and the sparrow-hawk devours, in the face of heaven, the innocent dove.

"But the discord which rages among animals is nothing in comparison to that which agitates the bosoms of men.† In the first place, the various species of mankind, scattered over the earth, prove that they do not all proceed from the same original. Some are black, others white, red, copper-colored, ash-colored. Some have wool instead of

* For the rely see Study VI.

† For the reply see Study VI.

hair, and others are without a beard. There are dwarfs and giants. Such are, in part, the varieties of the human race, every where equally odious to Nature. No where does she nourish man with perfect goodwill. He is the only sensible being that is obliged to cultivate the earth for a subsistence; and, as if this unnatural mother were determined to persecute the child she has brought forth, insects are permitted to consume his seed, hurricanes to destroy his harvests, ferocious beasts to devour his flocks, volcanoes and earthquakes to overwhelm his cities, while pestilence, which, from time to time makes the circuit of the globe, threatens, at length, his utter extermination. For his intelligence he is indebted to his own hands, his morality is the offspring of the climate, his governments are founded on force, and his religions on fear. Cold gives him energy and heat relaxes him. Warlike and free in the north, he is a coward and a slave between the tropics. His only natural laws are his passions. And what other laws should he seek? If they should sometimes lead him astray, is not Nature who gave them an accomplice in his criminality? But he is made sensible of his passions only as a warning never to gratify them. The difficulty of procuring subsistence, wars, imposts, prejudices, calumnies, implacable enemies, perfidious friends, treacherous females, four hundred sorts of bodily diseases, those of the mind still more painful and more numerous, render him the most wretched creature that ever saw the light. It were better that he had never been born. He is every where the victim of some tyrant. The other animals, at least possess the means of fighting or of flying; but man has been cast by accident on the earth, without habitation, without claws, without fangs, without agility, without instinct, and almost without skin; and, as if it were not sufficient to be persecuted by almost all nature, he is in a state of warfare with his own species. In vain would he try to defend himself. Virtue steps in and binds him that Vice may cut his throat at her ease. He has no alterna-

tive but to suffer and to be silent. What, after all, is this virtue of which he makes such a parade? A combination of his imbecility, a result of his temperament. With what illusions is she fed? Absurd opinions, founded merely on the sophistry of artful men, who have acquired supreme power by recommending humility, and immense riches by preaching up poverty. Every thing expires with us. From experience of the past, let us form a judgment of the future: we were nothing before our birth, we shall be nothing after death. Confidence in our virtues is of human invention, and the instinct of our passions of divine institution.

But there is no God.* If there were, he would be unjust. What being, possessing unlimited power and goodness, would have encompassed the existence of his creatures with so many ills, and would have decreed that the life of some should be supported only by the death of others? So much disorder is a proof that there is no God. It was par that created one. O! how the world must have been astonished at this metaphysical idea, when the first terrified mortal took it into his head to exclaim: 'There is a God!' Who could have made God? Why should he be God? What pleasure could he take in this perpetual circle of wretchedness, of regeneration and of death?"†

* See Study VIII.

† The refutation of these objections will be found in the Studies to which the references are made. They are all resolved directly or indirectly; for, in a work of this nature, it would have been impossible to follow the scholastic order of a system of philosophy.

STUDY IV.

REPLIES TO THE OBJECTIONS AGAINST PROVIDENCE.

Such are the principal objections which have been raised in almost every age against Providence, and which I shall not be accused of having stated too feebly. Before I attempt to refute them, I shall take the liberty to make a few reflections on those by whom they were maintained.

Did these murmurings proceed from some wretched mariner, exposed on the ocean to all the revolutions of the atmosphere, or from some peasant, bowed down by the contempt of the society he feeds, I should not be astonished. But our atheists are, in general, well sheltered from the injuries of the elements, and especially from those of fortune. Most of them have never even travelled. As to the ills of society, they complain of them unreasonably; for they enjoy the most agreeable homage, though they have burst asunder its bonds by their opinions. What have they not written on friendship, on love, on duty to our country and on the human affections, which they have degraded to the level of those of beasts; whereas some of them by the sublimity of their talents could have rendered them almost divine? Are they not, in part, the cause of our misfortunes, by flattering in a thousand ways, the passions of our modern tyrants; while a cross, rising in the midst of a desert, conveys consolation to the miserable? It is even difficult to restrain the latter within the bounds of a rational devotion, and it is a moral phenomenon, which long appeared to me inexplicable, to behold in every age, atheism springing up among men, who have most reason to extol the goodness of Nature, and superstition among

those who have the most just ground of complaint against her. It was amid the luxury of Greece and Rome, in the bosom of the wealth of Indostan, of the magnificence of Persia, of the voluptuousness of China, that men first appeared, who ventured to deny the existence of a Deity. On the contrary, the Tartars, destitute of habitations, the the savages of America constantly pressed with famine, the negroes without foresight or police, the natives of the rude climates of the north, the Laplanders, the Greenlanders, the Esquimaux, see gods every where, even in the pebbles of their shores.

I have long imagined atheism in the rich and voluptuous to be an argument of conscience. "I am rich and I am a knave;" they must say to themselves: "therefore there is no God. Besides, if there is a God, there must be an account to render." These reasonings though natural, are not general. There are atheists who possess legitimate fortunes, and who use them morally well, at least to external appearance. Besides, for the contrary reason, the poor man ought to argue: "I am industrious, honest, and miserable; therefore there cannot be a Providence." But it is in Nature herself that we must seek the source of these perverted reasonings.

In every country, the poor rise early, cultivate the earth, live in the open air and in the fields. They are penetrated with that active power of Nature, which fills the universe. But their reason, sinking under the weight of calamity, and distracted by their daily cares, is unable to support its splendour. It stops short, without generalizing, at the sensible effects of this invisible cause. From a sentiment natural to weak minds, they think that the objects of their religious worship are at their disposal, when they are within their reach. Hence it is, that, in every country, the devotions of the common people are presented in the fields, in the midst of the objects of Nature. Thither they are continually directing the religion of the country. A hermitage on a mountain, a chapel at the source of a stream,

a good image of the Virgin, in wood, niched in the trunk of an oak, or in the foilage of a hawthorn, attract them much more powerfully than the gilded altars of cathedrals. I except those, however, whom the love of wealth has entirely corrupted; such must have saints of silver, even in the fields. The principal religious acts of the common people in Turkey, Persia, India, and China, are pilgrimages in the fields. The rich, on the contrary, anticipated in all their wishes by men, no longer want any thing of God. They pass their lives in their apartments, where they see nothing but works of human industry, lustres, wax-candles, mirrors, secretaries, parasites, books, wits. They gradually lose sight of Nature, whose productions, besides are almost invariably presented to them disfigured, or out of season, and always has the effect of the art of their gardeners or of their artisans. They fail not, likewise to explain her sublime operations by the mechanism of the arts which are most familiar to them. Hence so many systems, whence you are enabled to guess the occupations of their authors. Epicurus, exhausted by voluptuousness, framed his world and his atoms, which exclude all ideas of a Providence, from his apathy; the geometrician forms it with his compasses; the chemist with salts; the mineralogist derives its origin from fire; and those who apply themselves to nothing, and they are not a few, suppose it, like themselves, in chaos and wandering at random. Thus the corruption of the heart is the first source of our errors. In the next place, the sciences, employing, in the investigation of natural things, definitions, principles and methods disguised by a great geometrical apparatus, seem by this pretended order, to reduce to order such as deviate from it. But if this order existed, such as they present it to us, could it be of any use to man? Would it be sufficient to comprise and to console the miserable? For what interest can they take in that of a society which tramples them under foot, when they have nothing to hope from that of Nature which abandons them to the laws of

motion? I shall now proceed to reply successively to the objections I have stated against Providence, founded on the disorders of the globe, of vegetables, of animals, of man, and on the nature of God himself.

REPLIES TO THE OBJECTIONS AGAINST PROVIDENCE, FOUNDED ON THE DISORDERS OF THE GLOBE.

THOUGH my ignorance of the means employed by Nature in the government of the world, is greater than I am capable of expressing, it is however, sufficient to cast one's eyes on a map, and to have read a little, to be able to demonstrate, that those, by which her operations are explained to us, are not founded in truth. From human insufficiency spring the objections levelled at divine Providence.

In the first place, to me it appears not more natural to ascribe the uniform motion of the earth through the heavens, to the two movements of projection and attraction, than to attribute similar causes to that of a man walking on the ground. In my opinion, the centrifugal and centripetal forces, no more exist in the heavens than the circles of the equator and of the zodiac. However ingenious these hypothesis may be, they are only scaffoldings, invented by men of genius, for rearing the fabric of science, but which no more assist us in penetrating into the sanctuary of Nature, than those employed in the construction of our temples, can conduct us into the sanctuary of religion. These combined powers are no more the moving principle of the courses of the stars, than the circles of the sphere are their barriers. They are merely signs, that have, at length, usurped the place of the objects they were intended to represent, which has been the case with every thing else of human establishment.

If a centrifugal force had raised the mountains of the

globe when it was in a state of fusion, there would have been mountains much more elevated than the Andes of Peru and of Chili. Chimborasso, the loftiest of that immense chain, is not above 3220 or 3350 fathoms in height; for the sciences are not perfectly agreed even in matters of observation.* This elevation, which is nearly the greatest known on earth, is less in proportion, than the third part of a line on a globe six feet in diameter. Now a block of melted metal presents scorias much more considerable in comparison to its mass. Look at the irregularities in the surface of a simple morsel of iron-dross. What frightful protuberances must have been formed on a globe of heterogeneous and boiling matter, three thousand leagues thick! The moon, with a diameter much less considerable, contains mountains, according to Cassini, that are three leagues in height. But what would have been the consequence if, in addition to the action occasioned by the heterogeneous nature of our terrestrial materials in a state of fusion, we likewise suppose that of a centrifugal force produced by the rotatory motion of the earth? In my opinion, this force must have been necessarily exerted in the direction of its equator, and instead of forming it into a globe, must have flattened it out in the heavens, like the large plates of glass made by the glass-blowers.

Not only the diameter of the earth at the equator is no greater than under its meridians, but the mountains there are not more elevated than in other parts. The celebrated Andes of Peru do not begin at the equator, but several degrees beyond it to the south, and running along the coast of Peru, Chili, and Magellan's land, they stop at the fifty-fifth degree of southern latitude in Terra del Fuego, where

* The former computation is by La Condamine, and the latter by Don George Juan. M. Humboldt, a traveller, whose zeal and intelligence are expected to throw much light on this important portion of the globe, on the 23d of June, 1802, ascended Chimborasso. A tremendous cleft prevented his reaching the summit of this immense colossus when only 472 yards distant from it. According to two geometrical operations, he calculates the height of Chimborasso to be 6534 yards or 3802 fathoms above the level of the sea. T.

they present to the ocean a promontory of eternal ice of prodigious height. Through their whole extent, they never open but at the streights of Magellan, forming, according to the testimony of Garcillasso de la Vega *, an uninterrupted rampart, fortified with pyramids of snow, inaccessible to men, to quadrupeds, and even to birds. On the contrary, the mountains of the isthmus of Panama, which are nearly under the line, have so little elevation in comparison to the Andes, that Admiral Anson, who coasted along the whole of them relates, that when he had arrived at a certain latitude, he experienced suffocating heats, "because the air," says he, "was not cooled by the atmosphere of the lofty mountains of Chili and Peru."

The highest mountains of Asia are entirely out of the tropics. The chain known by the name of Taurus and Imaus commences in Africa, at Mount Altas, in about the 30th degree of northern latitude. It traverses the whole continent of Africa, and all Asia, between the 38th and 40th degree of latitude; throughout this immense extent most of its summits are covered at all seasons with snow; which, as will elsewhere be demonstrated, is a proof of a considerable elevation. Mount Ararat, which forms a part of this chain, is more elevated, perhaps, than any mountain of the New World, to judge from the time taken by Tournefort and other travellers to ascend from the base of the mountain to the commencement of its snows; and, what is less arbitrary, from the distance, at which it may be seen, which is, at least, six days journey of a caravan. The peak of Teneriff is discernible at the distance of forty leagues. The mountains of Norway, called Felices, may be perceived fifty leagues off at sea, and according to a learned Swedish writer, they are three thousand fathoms in height. The peaks of Spitzbergen, of new Zealand, of the Alps, of the Pyrenees, of Switzerland, and those which are covered all the year round with ice, are

* History of the Incas, Book I. chap. viii.

exceedingly elevated, though most of them are very remote from the equator. They do not even run in directions parallel to that circle, as must have been the case admitting the supposed effect of the rotation of the globe: for if the chain of Taurus, in the ancient continent runs from west to east, that of the Andes in the new runs from north to south. Other chains proceed in other directions. But, if the pretended centrifugal force once possessed the power of heaving up mountains, why does it not possess at this day the power of raising a straw into the air? It ought not to leave a single detached body on the surface of the earth. They are affixed to it, I shall be told, by the centripetal force or gravity. But if that power actually draws all bodies towards it, why were not the mountains, when in a state of fusion, subject to its laws? I know not what reply can be made to this twofold objection.

The sea, appears to me as incapable of forming mountains as the centrifugal power. How can we imagine the possibility of its having thrown them up out of its womb? It cannot indeed be denied, that marbles and calcareous stones, which are only pastes of madrepores and amalgamated shells, that flints, which are a concretion, and marls, which are a solution of them, and that all the marine substances, found in every part of the two continents, are the produce of the ocean. These matters serve as the base of a great portion of Europe; hills of considerable height are composed of them, and they are found in various parts both of the old and the new world, of equal elevation. But how they were fixed in their present situations cannot be explained by any of the actual movements of the sea. In vain would we ascribe it to revolutions from west to east; never would the sea possess the power of raising any thing above its level. If certain ports of the Mediterranean which have actually been left dry by the sea, are produced as instances, it is no less certain, that there is a much greater number on the same

coasts, which it has not abandoned. On this subject that judicious observer, Maundrel, in his Journey from Aleppo to Jerusalem in 1699, says: "In the Adriatic gulf, the lighthouse of Arminium or Rimini, is a league from the sea, but Ancona, built by the Syracusans, is still close to the shore. The arch of Tragan, which rendered its port more commodious for merchants, is situated immediately upon it. Berritta, the favorite spot of Augustus, who gave it the name of Julia Felix, preserves no remains of its ancient beauty, except its situation on the brink of the sea, above which it is elevated no higher than is necessary to secure it against the inundations of that element."

The testimony of the most authentic travellers corresponds with that of this ingenious English writer. His countryman, Richard Pocock, who travelled in Egypt in 1737, with less taste, but with still greater accuracy, affirms that the Mediterranean has gained as much ground as it has lost.* "To convince yourself of this, says he, nothing more is necessary than to examine the coast, for you will see under water, not only a great quantity of works cut out of the rock, but likewise the ruins of many edifices. About two miles from Alexandria are to be seen under water the ruins of an ancient temple." An anonymous English writer, in a journal of travels replete with excellent observations, describes several very ancient cities of the Archipelago, such as Samos, the ruins of which are close to the sea. Of Delos, which, as every one knows, is in the centre of the Cyclades, he says: † "We found, along the coast, nothing but the remains of superb works, and we perceived, even in the water, the foundations of some large edifices which were never completed, and ruins of others that have been destroyed. The sea appears to have gained on the island of Delos; and, as the water was

* Travels into Egypt, Vol. I. pages 4 and 30.

† Travels in France, Italy, and the Islands of the Archipelago, in 1768. Vol. IV. Letter cxxvii. p. 256.

clear and the weather calm, we had an opportunity of viewing the remains of an ancient building, in places where the fishes swim at their ease, and over which the small vessels of these parts row to reach the coast."

The ports of Marseilles, Carthage, Malta, Rhodes, Cadiz, &c. are still frequented by navigators as in the times of the most remote antiquity. The Mediterranean could not have sunk at one point of its shores, without sinking at every other; for water in a basin always finds its level. This reasoning will apply to all the coasts of the ocean. If portions of the shores are found to be abandoned, it is not because the sea retires, but because the earth is gaining ground. This is the effect of alluvions, frequently occasioned by the overflowing of rivers, and ometimes by the ill-advised labors of man. The encroachments of the sea on the land are equally local, and are caused by some earthquake whose effects extended to no great distance. As these reciprocal invasions of the two elements are partial and frequently in opposition on the same coasts, which have in other respects constantly preserved their ancient level, it is impossible to deduce from them any general law for the movements of the ocean.

We shall presently examine how so many marine fossils could have been removed from its bed; and I confidently believe, that by adhering to respectable traditions, I shall be able to advance something on this subject not unworthy the attention of the reader. But to return to mountains, such as those of granite, which are the highest on the globe, and the formation of which is not ascribed to the sea, because they contain no deposit to attest such transition, the same philosophers employ another system to explain their origin. They suppose a primitive earth, whose height equalled the present elevation of the most lofty peaks of the Andes, of Mount Taurus, and of the Alps, which remain so many testimonies of the existence of this primeval soil: they then employ snows, rains, winds and I know not what other agents, to lower this ancient

continent to the brink of the sea, so that we inhabit only the bottom of this enormous quagmire. This idea has something imposing; in the first place because it excites terror, in the second, because it corresponds with the picture of apparent desolation presented by the globe: but it vanishes before this simple question: "What has become of the earth and the rocks of this tremendous devastation?"

If it is replied: They were thrown into the sea—this answer admits the existence of the basin of the sea, prior to the sinking of the continent; and the excavation of its bed would then present many other difficulties. But let us admit it. How comes it that those ruins have not filled it up in part? Why has not the sea overflowed? How happens it, on the contrary, that it should have abandoned tracts so extensive, as to form the greatest part of the two continents? Our systems, therefore, cannot account for the steepy elevation of the mountains of granite by any degradation of the rest of the earth, because they know not how to dispose of its ruins; nor for the formation of calcareous mountains by the movements of the ocean, because, in its present state, it is incapable of covering them. Besides, it is no new opinion that philosophers have considered the earth as a decaying fabric. The baron Busbequius, has the following observation on the opinion of Polybius, in his curious and entertaining letters: "Polybius pretends to have proved, that the entrance of the Black Sea, would, in process of time, be choaked by banks of sand, and by the mud which the waters of the Danube and Borysthenes carried along with them; that, consequently, the Black Sea would be inaccessible, and its commerce entirely ruined. Yet the sea of Pontus is at this day as navigable as at the time of Polybius."*

Bays, gulphs, and mediterranean seas, are no more t'an

* Letter 1. p. 124

effects of irruptions of the ocean into the land, than mountains are productions of the centrifugal motion. These disorders, as they are termed, are necessary to the harmony of all the parts of the earth. Let us suppose, for example, that the Streights of Gibraltar were closed, as they are said formerly to have been, and that the Mediterranean no longer existed. What, in this case, would become of so many rivers of Europe, Asia and Africa, which are supplied by the vapors ascending from that sea, and roll back their waters to it in wonderfully exact proportion, as the calculations of many ingenious men have fully demonstrated? The north winds, which constantly refresh Egypt in summer, and waft the emanations of the Mediterranean as far as the mountains of Ethiopia, to supply the sources of the Nile, traversing, according to our supposition, a space destitute of water, would carry drought and barrenness over all the nothern regions of Africa, and even into the interior of that continent. The south of Europe would fare still worse; for the hot and scorching winds of Africa, which charge themselves with so many rainy clouds in their progress across the Mediterranean, now blowing over the dry bed of that sea, without tempering their heat by any humidity, would blast, with burning sterility, all the vast portion of Europe extending from the Streights of Gibraltar to the Euxine Sea, and would dry up all the regions through which now flow the Rhone, the Po, the Danube, and a multitude of other rivers. Besides, it is not sufficient to suppose that the sea forced a passage into the bed of the Mediterranean, as a river inundates a champaign country, after breaking down its banks; it is necessary still farther to suppose, that this deluged tract was lower than the ocean, a circumstance not to be met with in any part of the *terra firma*, which is every where above the level of the sea, those portions excepted that have been recovered from the deep by human industry, as is the case in Holland. It must farther be supposed, that a lateral sinking of the

earth must have taken place round the whole circumference of the Mediterranean, to regulate the circuits, declivities, channels, and windings of so many rivers, which come from such a distance to discharge themselves into it, and that this sinking must have been effected with wonderful accuracy: for these rivers, frequently issuing from one and the same mountain, arrive, by the same declivities, at distances widely different; and yet, notwithstanding the difference of their courses and of their levels, their channels never cease to be full, and their waters never run either too fast or too slow. It is not, therefore, to an irruption of the ocean that the Mediterranean must be ascribed, but to the sinking of the globe over a tract, upwards of twelve hundred leagues in length and eight hundred in breadth, which has been effected with arrangements so happy and so favorable to the circulation of so many lateral rivers, that if time permitted me to follow the course of a single one, it would be seen how utterly destitute of foundation this supposition must be. Earthquakes, indeed, produce convulsions of this nature, but of small extent, and which, so far from forming channels for rivers, absorb the courses of streams, and sometimes convert them into lakes or marshes. These hypotheses may be applied to all gulfs, bays, great lakes and Mediterranean seas; and we shall be convinced, that if these inland waters did not exist, not a spring would remain in the greatest part of the habitable globe.

To form an idea of the order of Nature we must relinquish our circumscribed ideas of human order. We must renounce the plans of our architecture, which frequently employs right lines, that our sight may, at one glance, take in our whole domain; which makes symmetry indispensable in all our arrangements; which gives wings to our houses on the right and on the left, that every part of our habitations may be comprehended in a single view, while we occupy the centre; and which levels with the rule, smooths and polishes the stones it employs, that our mo-

naments may be pleasing to the eye and to the touch. The arrangements of Nature are not those of a Sybarite; their object is the benefit of mankind and of all beings. When Nature raises a rock, she introduces clefts, inequalities, projections, perforations. She hollows and roughens it with the chisel of time and of the elements; she plants on it herbs and trees; she stores it with animals and places it in the bosom of the sea, in the very focus of tempests, to afford a retreat to the inhabitants of the air and of the waters.

When Nature, in like manner, intended to scoop out the basins of the seas, she applied neither the rule nor the compasses to their borders, but formed in them deep bays sheltered from the general currents of the ocean, that, during the violence of tempests, the rivers might there disembogue themselves in security; that legions of fishes might resort thither for refuge in all seasons, and there ick up the alluvion of the earth, carried along by the resh waters; that they might there spawn, many of them ascending even into the rivers, in quest of shelter and of food for their young. It is for the preservation of these harmonies that Nature has fortified every shore with long banks of sand, with reefs, with enormous rocks, and islands, which are placed at suitable distances to protect them from the fury of the ocean.

She has employed similar dispositions in forming the beds of rivers, of which some notice will be taken in the sequel of this Study, though our limits will permit us only to skim lightly over a subject so new and so fertile in observations. Accordingly she has not made the waters of rivers to run in a straight line, as they must have flowed according to the laws of hydraulics, on account of the tendency of their movements towards a single point, but she causes them to wind about for a long time through the bosom of the land, before they discharge themselves into the sea. In order to regulate the course of these rivers, and to accelerate or to retard it, conformably to the level

of the countries through which they flow, she pours into them lateral rivers that accelerate it in a flat country, when they form an acute angle with the source of the main river, or retard it in mountainous tracts, by forming a right, and sometimes an obtuse angle with its stream. These laws are so infallible, that, by merely inspecting a map, a judgment may be formed, whether the rivers that water a country are slow or rapid, and whether this country is flat or elevated, by the angle which the confluent streams form with their currents. Thus most of those which discharge themselves into the Rhone form right angles with that rapid river, in order to moderate its impetuosity. Some of these confluent rivers are real dykes, crossing a stream from side to side, in such a manner, that the river so crossed, whose current was very rapid above the confluence, flows very gently below it. This may be observed in many of the American rivers, and especially in the Mechassébé. From these simple perceptions, which time will permit me only to indicate in this place, it may be concluded, that it is easy to retard or to accelerate the current of a river, by merely altering the angle of incidence of its confluent streams. This remark I offer not by way of advice, but as a very curious speculation; for it is always dangerous for man to derange the plans of Nature.

The rivers, on discharging themselves into the sea, produce, in their turn, by the directions of their mouths, retardation or acceleration in the courses of the tides. But I must not launch out farther into the study of these grand and sublime harmonies. I am satisfied with having said enough to convince the reader, that the bed of the seas was scooped out expressly to receive their waters.

I must, however, produce one argument more, calculated to remove every species of doubt on the subject. If the bed of the seas was formed, as it has been supposed, by a sinking of the land, the shores of the sea, under the water, would have the same inclination as the adjoining continent. Now, this is not the case on any coast whatever. The

declivity of the bed of the sea is much more rapid than that of the contiguous lands, of which it is by no means a prolongation. Paris, for example, stands about twenty-six fathoms higher than the level of the sea, reckoning from the base of the bridge of Notre Dame. From this bridge, therefore, to the point where it discharges itself into the sea, a distance of forty leagues, the Seine falls no more than one hundred and thirty feet; whereas, measuring only a league and a half from its mouth into the sea, you find all at once an inclination of sixty to eighty fathoms, the depth at which vessels anchor in the road of Havre-de-Grace. These differences between the level of the lan and the level of the bed of the sea, in the same line direction, are found more or less on every coast. Dampier an English navigator, has observed, that the seas which wash elevated shores are much deeper, and that on low shores they are very shallow: but there is always this striking difference, that, along low shores the bed of the sea is always more inclined than the soil of the adjoining continent, and that sometimes along high lands, no bottom is to be found. This, therefore, demonstrates, that the beds of the seas were hollowed out expressly to contain them. The declivity of their excavations is regulated by laws infinitely wise; for if it were the same as that of the contiguous lands, the billows of the sea, whenever the wind blew towards the shore, would cover the adjacent land to a considerable distance. This actually happens in storms and extraordinary tides, when the waves overflow their accustomed bounds; for then meeting with a declivity, gentle and inconsiderable in comparison to that of their bed, they sometimes deluge the land to the distance of several leagues. This happens from time to time in the island of Formosa, whose natural ramparts were probably destroyed, at some remote period, by the inhabitants. For nearly a similar reason, Holland is exposed to inundations, because it has encroached on the very bed of the sea. On the shores of the ocean principally is fixed that invisi-

ble barrier which the Author of Nature has prescribed to its waves. There you perceive that you are at the intersection of two different planes, one of which terminates the declivity of the land, and the other commences that of the sea.

It cannot be alledged that it was by the currents of the sea, that its bed was hollowed out; for where could they have deposited the earth that filled it? It is impossible for them to elevate any thing above their own level. It cannot even be asserted that the channels of the rivers were excavated by the current of their own waters, for there are several which pass, by subterraneous routes, through masses of solid rock, so hard and so thick as to bid defiance to the pick-axes and the mattocks of our laborers. Besides, these rivers must have formed, at the place where they discharge themselves into the sea, banks of sand and accumulations of earth, proportioned to the quantity of that substance which they must have excavated to form their beds; on the contrary, most of them, as we have observed, empty themselves at the bottom of bays, hollowed out expressly to receive them. How is it that these bays have not been filled, since they are incessantly conveying into them the substances washed away from the land? Why is not the bed of the ocean itself choaked up, by the perpetual accumulation of the spoils of vegetables, sand, rocks, and the wreck of earth, which, on the least shower that falls, turns yellow all the rivers that fall into it? The waters of the ocean have not risen a single inch since men began to observe them, as might easily be proved from the state of the most ancient ports of the universe, that are still, for the most part, at the same level. I have not time to treat, in this place, of the means employed by Nature for the construction, preservation and purification of this immense basin: they furnish us with fresh subjects of admiration I have said enough to prove that, what in Nature appears to us to be the effect of ruin and of chance, is, in many instances, the result of the most

profound intelligence. Not only no hair falls from our heads, nor a sparrow from a tree, but not a pebble rolls on the shores of the ocean, without the permission of the Almighty, according to the sublime expression of Job: *Tempus posuit tenebris, et universorum finem ipse considerat, lapidem quoque caliginis et umbram mortis* —"He has set bounds to darkness, and himself considers the end of all things, the stone buried in the obscurity of the earth and the shadow of death.*" He likewise knows the moment when that stone must spring into light, to serve as a monument to the nations.

Independent of the innumerable geographical proofs, which attest that the ocean never excavated by its irruptions a single bay, nor detached any portion of the continent, there are others which may be deduced from vegetables, from animals, and from man. This is not the proper place to dwell on that subject: but, I shall introduce, by the way, an observation from the vegetable world, which proves, for example, that England was never united to the continent of Europe, as some have supposed, but that from the beginning it was separated from it by the Channel. Cæsar remarks, in his Commentaries, that at the time when he invaded the island, it contained neither the beech-tree nor the fir; though both these trees were common in Gaul, along the banks of the Seine and of the Rhine. Now if these rivers had ever flowed through Britain, they must have carried along with them the seeds of the vegetables which grew at their sources and on their banks. The beech and the fir which, at this day, thrive well in England, must, of necessity, have grown there at that time, particularly as they would not have changed their latitude, and are, as we shall see elsewhere, of the genus of fluviatic trees, the seeds of

* In the English version of the Bible this passage is thus translated: "He setteth an end to darkness and searcheth out all perfection the stones of darkness and the shadow of death." Job, chap. xxviii. A. T.

which sow themselves by means of the waters. Besides, whence could the Seine, the Rhine, the Thames, and so many other rivers whose course is supplied by the emanations of the Channel, have received their water? The Thames, then, must have flowed through France, or the Seine through England, or to speak more conformably to truth, the countries now watered by those rivers, must have been completely dry.

Our maps, like most of the instruments of our sciences, have misled us. Observing in them so many indentations and projections on the coasts of the continent, we have been induced to believe, that the currents of the sea must have occasioned these irregularities. We have just seen that this effect was not produced by them; we shall now proceed to demonstrate that this could not possibly have been the case.

Dampier, who was not the first circumnavigator of the globe, but who, in my opinion, has made the most judicious observations on it, says in his excellent Treatise on the Winds and Tides: "Bays have seldom any currents; or if they have they are only counter-currents. And these counter-currents too do set from one point to another without interfering with the little bays between." In proof of this, he quotes various observations, and many of a similar nature are found scattered through the journals of other navigators. Though he has treated only of the currents between the tropics, and even that with some degree of obscurity, we shall generalize this principle, and apply it to the chief bays of the continents.

I reduce the general currents of the ocean to two. Both of these proceed from the poles, and are produced, in my opinion, by the alternate fusion of their ices. Though this is not the proper place to examine their cause, yet it appears so natural, so new, and of such curious investigation, that the reader will not be offended, if I give him an idea of it by the way.

The poles appear to me the sources of the sea, as the

icy mountains are the sources of the principal rivers. It is, if I am not mistaken, the ices and the snows which cover our poles, that annually renovate the waters of the sea, comprehended between our continent and that of America, of which the projecting and retreating parts correspond like the banks of a river. It may be remarked, at first sight, on a map of the world, that the bed of the Atlantic Ocean gradually grows narrower towards the north, and widens towards the south; and that the projecting part of Africa, corresponds to that great retreating part of America, at the bottom of which is situated the Gulf of Mexico; as the prominent part of South America corresponds to the vast Gulf of Guinea; so that in its configuration this bed has the proportions, the sinuosities, the source and the mouth of a fluviatic channel.

Let us now observe that the ices and snows form, in the month of January, on our hemisphere, a cupola, the arch of which extends more than two thousand leagues over the two continents, with a thickness of some lines in Spain, of some inches in France, of several feet in Germany, of several fathoms in Russia, and of some hundreds of feet, beyond the sixtieth degree; such as the ices which Henry Ellis and other navigators of the north there met with, even in the middle of summer, and of which some, according to Ellis, were from fifteen to eighteen hundred feet above its level; for their elevation probably continues increasing up to the very pole, in the same proportion as those that cover the summits of our icy mountains, which must give them, under the very pole, a height which there is no possibility of ascertaining. From this simple outline we perceive what an enormous mass of water is fixed by the cold of winter, in our hemisphere, above the level of the ocean. It is so considerable that I think myself warranted to ascribe to its periodical fusion the general movement of our ocean and that of our tides. We may, in like manner, attribute to the effects of the fusion of the ices of the south pole, which are still more extensive, the movements of its ocean.

No conclusion relative to the movements of the sea has yet been deduced from two masses of ice so considerable, accumulated at the poles of the world. They must, however, occasion a very sensible augmentation of its waters, when they are restored to it by the action of the sun which causes their partial fusion every year; or a great diminution when they are withdrawn from it by the effec of evaporations, which fix them in the form of ice on the poles, when the sun retires. On this subject I shall present to the reader some reflections and observations, which I venture to call extremely interesting; and shall leave a decision to the judgment of those unfettered by system and by partiality. I shall endeavor to abridge them as much as possible, and hope that I shall be pardoned, in consideration of their novelty. From the simple effusions of the polar ices I shall deduce the general movements of the seas, which have hitherto been ascribed to gravitation, or to the attraction of the sun and of the moon on the equator.

It cannot be denied, in the first place, that the currents and tides proceed from the pole, in the vicinity of the polar circle.

Frederic Martens, who, in his voyage to Spitzbergen in 1671, advanced to the eighty-first degree of north latitude, positively asserts, that the currents among the ices set towards the south. He farther adds, that he can say nothing concerning the flux and reflux of the tides. This should be carefully remarked.

Henry Ellis observed with astonishment, in his voyage Hudson's Bay, in 1746 and 1747, that the tides there came from the north, and that they were accelerated, instead of being retarded, in proportion to the height of the latitude. He asserts that these effects, so contrary to those usual on our coasts, where they come from the south, demonstrate that the tides of those latitudes proceed neither from the line, nor from the Atlantic Ocean. He ascribes them to a supposed communication between

Hudson's Bay and the South Sea; a communication which he sought with much ardor, and which was the object of his voyage. Now, however, we are convinced that it does not exist, by the fruitless attempts made by Captain Cook, to discover it in the South Sea, to the north of California, conformably to the advice long before given by the celebrated navigator, Dampier, whose sagacity and observations were, by the bye, of great service to Captain Cook in all his discoveries.

Ellis farther observed, that the course of these northern tides of America was so violent in Wager's Streights, in the latitude of 65 deg. 37 min. that it ran at the rate of eight to ten leagues an hour. He compares it to the sluice of a mill. He remarked that the surface of the water there was fresh, which perplexed him exceedingly, and diminished his hope of a communication between the bay and the South Sea. He, nevertheless, retained the conviction of the existence of this passage, as men prepossessed in favor of their opinions refuse credit even to evidence itself.

John Hugo de Linschoten, a native of Holland, had made nearly the same remarks, on the currents of the northern tides of Europe, when he was at Waigats' Streight in the latitude of 70 deg. 20 min. In the two voyages, undertaken by this accurate observer to that streight in 1594, and 1595, with a view to discover a passage to China by the north of Europe, he repeats these observations. "We again took notice," says he, "concerning the course of the tide, what he had already remarked with much exactness, that it comes from the east." He likewise observed that the waters were brackish or half salt, which he attributes to the fusion of a prodigious quantity of floating ice, that stopped his passage through Waigats' Streight; for the ice formed even by sea-water is fresh. But Linschoten draws no conclusion, any more than Ellis, from these tides of water half fresh, descending from the north; and full of his object, like the English navigator,

he ascribes them to a sea, which he supposes to be open, to the east, beyond Waigats' Streight, through which he purposes to proceed to China.

His countryman, the unfortunate William Barentz, who performed the same voyages in another vessel of the same fleet, and who ended his days on the northern coast of Nova Zembla, where he had wintered, found, to the north and to the south of that island, a perpetual current of ice, which set in from the east with such rapidity, that, like Ellis, he compares it to a sluice. Some of these ices were thirty-six fathoms deep in the water, and sixteen fathoms high above it. This was at Waigats' Streights, in the in the month of July and August. He there found some Russian fisherman from Petzora, who were navigating those seas, covered with floating rocks of ice, in a boat made of the bark of trees sewed together. These poor people made the Dutch a present of some fat geese, with strong assurances of friendship; for, in all climates, calamity has a powerful tendency to conciliate men. They informed him that this same streight of Waigats', which disgorged such vast quantities of ice, would be entirely closed towards the end of October, and that it would be possible to reach Tartary by crossing what they denominated the sea of Marmara.

It is incontestible, that all the effects I have been relating can proceed only from the effusions of the ice surrounding the pole. I shall here remark, by the way, that these ices, which flow with such rapidity to the north of America and of Europe, about the months of July and August, contribute to our high equinoctial tides in September; and that, when their effusions are stopped in the month of October, like those at Waigats' Streight, this is the very time when our tides begin to diminish.

I may now be asked, why the tides set in from the north, and from the east towards the north of America and of Europe, and why they come from the south on our coasts and on those of America, which are under the same latitudes?

I might be satisfied with having said enough to demonstrate, that all the tides are not produced by the pressure or the attraction of the sun and moon on the equator. I should have proved the imperfection of our systems which ascribe them to those causes; but I shall proceed to repair what I have been pulling down by other observations, and to show that there is not one single tide on any coast whatever, but owes its origin to the polar effusions.

An observation of Dampier will serve, at first, as the basis of my reasonings. That acute observer makes a distinction between currents and tides. He lays it down as a principle, founded on many experiments detailed in his Treatise on Winds and Tides, that currents are scarcely ever met with but at sea, and tides on the coasts. This being established, the polar effusions, which are northern or eastern tides to those who are in the vicinity of the pole, or of the bays communicating with it, take their general course in the midst of the channel of the Atlantic Ocean, attracted towards the Line by the diminution of the waters, which the sun is there continually evaporating. They produce, by their general current, two contrary currents, or collateral *vortices*, similar to those produced by rivers on their banks.

I am not supposing, without foundation, the existence of these counter-currents or whirlpools, after the manner of system-makers, who create new causes, in proportion as Nature presents them with new effects. These vortices are hydraulic re-actions, the laws of which are explained by geometry, and the existence of which is attested by experience. If you look at the current of a brook, you will frequently see the straws which float along its banks, ascending against the stream, and when they arrive at points where counter-currents cross the general current, you observe them agitated by those two opposite powers, and spinning round a considerable time, till they are at length carried away by the general current. These counter-cur-

rents are still more perceptible when this rivulet flows through a basin which has itself no flux; for the re-action is then so considerable round the whole circumference of the basin, that the counter-currents carry along all the bodies which float in it to the very place where the rivulet discharges itself. These lateral counter-currents are so perceptible on the banks of rivers, that watermen often take advantage of them to ascend against the stream. M. de Crevecœur relates, that he proceeded 422 miles in fourteen days, ascending the Ohio along its banks, "by means of the counter-currents, which," says he, "always have a velocity equal to that of the principal current."*

They are almost as strong on the banks of lakes: Father Charlevoix, who has published some judicious observations on Canada, says, that when he embarked on Lake Michigan, he proceeded at the rate of eight good leagues a day, by the assistance of these lateral counter-currents, though he had a contrary wind. He very rationally supposes, that the rivers which discharge themselves into this lake produce, in the midst of its waters, strong contrary currents. "But," says he,† these strong currents are perceptible only in the middle of the channel, and produce on their banks vortices or counter-currents, of which those avail themselves who go from shore to shore, as persons are obliged to do who perform the voyage in canoes of bark."

Dampier abounds in observations on these counter-currents of the sea, which are very common, especially in the streights of islands situated between the tropics. He frequently mentions the extraordinary effects produced by their encountering the particular currents which occasion them; but as he has not considered the tides themselves as vortices of the general current of the Atlantic Ocean, of which I do not conceive him to have suspected

* Letters of an American Farmer Vol. III. p. 433.

† History of New France, Vol. VI. p. 2.

the existence, though he has treated largely of the two currents of monsoons of the Indian Ocean, I shall proceed to adduce some facts, that perfectly harmonize with those observed by him in the south seas and those of the East-Indies. These facts will, besides, prove in an eminent manner, the existence of these polar effusions: for wherever these effusions meet, on their way to the south, with their counter-currents proceeding northward, they produce by their concussion the most tremendous tides, and the movements of which are diametrically opposite. Let us only consider their point of departure to the north of Europe, where they begin to leave our coasts and to stretch away into the open sea. Pontoppidan, in his History of Norway, informs us that, above Bergen, there is a place called Malestrom, very formidable to mariners, where the sea forms a prodigious vortex several miles in diameter, in which a great number of vessels have been engulphed.*

* This extraordinary natural phenomenon is situated in the latitude of 68 deg. near the island of Moskoe, from which it is likewise denominated Moskoestrom. Such is its impetuosity, that its roarings are heard at a great distance, and have no intermission excepting for a quarter of an hour at the turn of high and low water, when its fury seems to subside and fishermen venture upon it with their boats. The motion, however, soon returns, and gradually increasing till it forms a vortex, absorbs whatever comes within its influence. When it is most impetuous and its fury is heightened by a storm, it is dangerous to approach within one Norway or six English miles of it. Ships coming within its attraction are inevitably absorbed and carried to the bottom, where they are dashed to pieces against the rocks, and it is several hours before their fragments appear on the surface. It frequently happens that whales, approaching too near this current, are overpowered by its violence, and it is impossible to describe their howlings and bellowings in their fruitless struggles to disengage themselves. A bear once attempting to swim from the island of Lofoden to that of Moskoe, with a design of preying upon the sheep at pasture in the island, afforded the like spectacle to the inhabitants: the stream took him and bore him down, roaring tremendously, so as to be heard on the shore.

An observation, which favors our author's hypothesis of the polar effusions, is mentioned by a Danish ecclesiastic, the Rev. Mr. Debes, in his account of this vortex. On Sumboe-munk, a part of the coast opposite to the Malestrom, this singularity is remarked, that in the midst of summer and in a serene sun-shine, the people who frequent that place to catch birds, can scarcely stand in their ambuscades for cold: and the very birds which breed and live there are so bare of flesh, that their whole substance is little more than feathers.

James Beverell says positively, that in the Orkney islands there are two opposite tides, one running from the north-west and the other from the south-west; that they dash their foaming billows to the clouds, and seem desirous of converting the streight that separates them into foam.* The Orkneys are situated a little below the latitude of Bergen, and in the prolongation of the northern coast of Norway, that is, in the confluence of the polar effusions and of their counter-currents.

The other islands of the sea are in similar positions, as we could prove did time permit. For example, the channel of Bahama, which runs with such rapidity towards the north, between the continent of America and the Lucayos, produces round those islands by its encountering the general current of that sea, the most tumultuous tides, perfectly resembling those of the Orkneys.

These counter-currents to the course of the Atlantic Ocean, occasion, then, our European and American tides, which set in to the north from our coasts, whereas its ge-

A circumstance not the least singular respecting this vortex is the attempt of Mr. Ramus, a learned native of Denmark, to prove that Scylla and Charybdis, which have always been supposed to be situated on the coast of Sicily, were no other than this Moskoestrom, whither Ulysses was actually driven in his wanderings. The facts and coincidences he adduces in support of this opinion are both curious and interesting, and may be found in Pontoppidan. T.

* Beverell's Beauties of Scotland, Vol. VII. He likewise says, that in the island of Pomona or Mainland, the largest of the Orkneys, there is in the north of the western division a very lofty promontory, on which the tides that set in from the north-west rush with such violence, that the waves rise much higher than its summit. In another place he informs us that, between Phara and Heth, the northernmost of these islands, the tide has a very extraordinary current, ascending from south-east to north-west for three hours only, and descending nine whole hours to the south-west. Let the reader reflect on this high tide from the north-west, and the other which sets in from the north-east for nine hours and returns only for three, and he will discover the immediate action of the effusion of the ices of the north pole on the Orkneys, and its re-action which becomes weaker in proportion as it ascends towards its source. But I am convinced that these northern tides at the Orkneys never occur but in summer when the sun warms the north pole; and that in winter the currents of the south pole must produce an effect diametrically opposite.

neral current runs southward, at least during the summer. I could adduce a thousand other observations on the existence of these contrary currents, but a single one more general than any I have quoted, will suffice, both on account of its importance and its authenticity, since it is the first, and perhaps the only one made in Europe; it is that of Christopher Columbus, when setting out on the discovery of the New World. He sailed from the Canaries, the beginning of September, and steered to the west. During the first days of his voyage he found that the currents carried him to the north-east. When he had advanced two or three hundred leagues from the land, he perceived that they took a southern direction, which greatly alarmed his companions, who imagined that the sea was hurrying them towards some tremendous precipice. At length, on approaching the Lucayo islands, he again found them setting to the northward. The journal of his voyage may be seen in Herrara. It is my opinion that this general current, which flows from our pole in summer with such rapidity, and which is so violent towards its source, according to the experience of Ellis and Linschoten, crosses the equinoctial line, especially as its course is not checked by the effusions of the south pole, which, in that season, is covered with ice. For the same reason I presume, that it proceeds beyond the Cape of Good Hope, whence it returns to the torrid zone, to which it is attracted by the diminution of the waters which the sun is there daily pumping up, and that, being directed towards the east by the position of Africa and of Asia, it forces the Indian Ocean into the same direction, contrary to its ordinary movement. I consider it therefore, as the primary cause of the western monsoon, which takes place in the Indian seas in the month of April, and does not end till September.

I am likewise of opinion that the general current, issuing during winter, from the south pole, which the sun then warms with his rays, restores to the Indian Ocean its na-

tural motion towards the west, which is, besides, directed that way by the general impulsions of the east wind, that usually blows in the torrid zone, when nothing deranges its course. I presume, likewise, that this current, in its turn, penetrates into our Atlantic Ocean, directs its motion towards the north by the position of America, and produces various other changes in our tides. In fact, Froger says in his Voyage to the South Sea, that in Brasil the currents follow the sun. They run southward when that luminary is in the south, and northward when he is in the north Those who have had experience of these effusions of the south pole beyond Cape Horn, have found, that in the summer of that hemisphere, the tides set to the north, as was observed by William Schouten, who, in January, 1661 discovered the streights of Le Maire: but, on the contrary those who have doubled the Cape in the winter of those regions have found, that the tides ran southward and proceeded from the north, as Frezier observed in the month of May, in the year 1712. It now appears possible to me to explain, by these polar effusions, the principal phenomena of our tides. It is evident, for example, why those of the evening, in summer, are higher than those of the morning; because the sun acts more powerfully by day than by night, on the ices of the north pole, which are under the same meridian as ourselves. This effect resembles the intermission of certain springs, that issue from icy mountains, and flow more abundantly in the evening than in the morning. It is farther evident, how it happens that our morning tides, in winter, are higher than those of the evening, and why the order of our tides changes at the end of every six months, according to the remark of Bouguer, who thought the circumstance astonishing, but without assigning any reason for it. The sun being then in the south pole, the effects of the tides must be reversed as well as the causes which produce them.

I shall now proceed to suggest harmonies between the sea and the poles, still more extensive and more striking.

The tides are lower at the solstices than at any other season of the year; this is the very time when there is the most ice round the poles, and consequently the least water in the sea. The reason is the following. The winter solstice is to us the season of the greatest cold; there is, at that time on our pole and our hemisphere the greatest possible accumulation of ice. It is, indeed, the summer solstice of the south pole, but there is little ice melted on this pole; because the action of the greatest heat is not felt there, as with us, only when the earth has an acquired heat, added to the actual heat of the sun, which takes place in the six weeks succeeding the summer solstice, producing, in our summer, the hottest season of the year, which we call dog-days.

At the equinoxes, on the contrary, we have the highest tides. At these seasons there is the least ice at the poles, and consequently the greatest mass of water in the ocean. At the September equinox, the greatest part of the ice of our pole, which has undergone all the heats of summer, is melted, and that of the south pole begins to be in a state of fusion. It will farther be remarked, that the tides of the March equinox are higher than those of September, because it is the end of summer, at the south pole, which has much more ice than ours, and consequently sends to the ocean a much greater mass of water. It has more ice because the sun is six days less in that hemisphere than in ours. If I should be asked why the sun does not communicate to both the poles an equal proportion of his light and heat, I shall leave to the learned the investigation of the cause, but shall ascribe the reason to the divine goodness, which has been pleased to bestow a larger portion of its blessings on that part of the globe, containing the greatest extent of land and the greatest number of inhabitants.

I shall say nothing of the intermission of these polar effusions, which produce, on our coasts, two fluxes and refluxes, nearly in the same time that the sun, making the circuit of the globe, over our hemisphere, alternately heats

two continents and two oceans; that is, in the space of twenty-four hours, during which his influence acts twice and is twice suspended. Neither shall I treat of their retardation, which is nearly three quarters of an hour from one tide to another, and which appears to be regulated by the different diameters of the polar cupola of ice, whose extremities, being melted by the sun, diminish and retire farther from us every day, and whose effusions must consequently take more time to reach the Line and to return from the Line to us. Nor shall I dwell on the other relations which these periods of the pole have with the phases of the moon, especially when she is at the full; for her beams possess an evaporating heat, as the late experiments made at Rome and Paris, have demonstrated: this would involve me in a series of observations and of facts that would carry me too far.

Much less shall I engage in a discussion of the tides of the south pole, which in the summer of that pole, come immediately from the west and south-west in vast surges, according to the experience of the Dutch navigator, Abel Tasman, in January and February 1692; and of their irregularity on the coasts of that hemisphere, as on those of New Holland, where in the month of January, 1668, Dampier found, to his great astonishment, that the highest tide setting in from east-quarter-north did not happen till three days after full moon; and where his terrified crew were under apprehensions for several days that their vessel, which they had hauled on shore to be refitted, could never be got afloat again.* I shall say nothing of those of New Guinea, where on the contrary, in the course of a single night, towards the end of April, the same navigator met with several, which, in opposition to ours, extended from north to south, and came from the west in very rapid and violent swells, and preceded by vast surges, which did not break; nor of the inconsiderable elevation of those tides on the coasts of Brazil and in most

* Dampier's Voyages: Treatise on Winds and Tides.

of the islands of the South Sea, and of the East Indies, where they rise only five, six, or seven feet, whereas Ellis found them twenty-five feet at the entrance of Hudson's Bay, and Sir John Narborough twenty feet at the mouth of the Streights of Magellan. Their course towards the equator in the South Sea, their retardations and accelerations on those shores, their directions, sometimes eastward and sometimes westward, according to the monsoons, lastly, their elevations which increase as we approach the pole, and diminish in proportion to our distance from it, even between the tropics, prove that their focus is not under the Line. The cause of their motions is not dependent on the attraction or the pressure of the sun and moon on that part of the ocean; otherwise these forces would undoubtedly act with the greatest energy, in periods as regular as the courses of those luminaries: but it seems to depend entirely on the combined heat of these same luminaries on the poles of the earth, their regular effusions of which, not being confined in the southern hemisphere, as in ours, by the channel of the two opposite continents, produce, on the shores of the Indian and oriental seas vague and intermitting expansions.

It is sufficient, therefore, to admit these alternate effusions of the polar ices, which it is impossible to call in question, to explain, with the utmost facility, all the phenomena of the tides and of the currents of the ocean. In the journals of the most enlightened navigators, these phenomena present a perpetual obscurity and a multitude of contradictions, when they are determined to refer the causes to the constant pressure of the sun and moon on the equator, without paying attention to the alternate currents of the poles, which direct their course towards the Line; to their counter-currents which, returning towards the poles, produce the tides; and to the revolutions occasioned by winter and summer, in those two movements.

It has indeed been imagined, in modern times, that the

sea must be clear of ice at the poles * an opinion founded on this extraordinary assertion, that the sea freezes only along the shore: but this supposition originated in the closet, and contradicts the experience of the most celebrated navigators. The efforts of Captain Cook towards the south pole have demonstrated its fallacy. That intrepid navigator, in the month of February, the dog-days of that hemisphere, could never approach nearer to the

* This opinion, if not broached by the late Hon. Daines Barrington, was, at least, strenuously supported by him. In consequence of this conviction, he proposed a voyage toward the north pole, which the council of the Royal Society recommended to the board of Admiralty, and which gave rise to the voyage of Captain Phipps, afterwards Lord Mulgrave. The highest point which that navigator was capable of reaching was 81 deg. 26 m. Mr. Barrington, to clear himself of the imputation of having planned an undertaking, utterly impracticable, from the solid body of ice, which is invariably met with in those latitudes, read a paper to the Royal Society in May, 1774, in which he attempted to prove the possibility of approaching very near to the pole, and even of reaching that point. In that paper he related the following singular account given him by Dr. Campbell. About the year 1745, Dr. Campbell was acquainted with a Dr. Dallie, who then resided in London and practised as a physician, and who asserted that he had been farther towards the south and north than any person that ever existed. He had sailed with Roggewein, the celebrated Dutch navigator, who, in the year 17??, is said to have reached the latitude of 66 deg. 30m. south. He had likewise sailed when very young in a Dutch ship of war sent out to superintend the Greenland fishery when he penetrated (to the best of Dr. Campbell's recollection, who related it from memory after an interval of thirty years) as far north as 88 deg. and he added that the weather was warm, the sea perfectly free from ice, and rolling like the Bay of Biscay. With these favorable appearances Dallie pressed the captain to proceed farther; but he replied that he had already gone too far, and had neglected his station, for which he should incur blame in Holland. For the same reason he would suffer no journal to be made, but returned as speedily as possible to Spitzbergen. Though this was probably nothing more than an attempt of an obscure individual to divert himself with the credulity of a man of letters, yet Mr. Barrington prosecuted the subject still farther, and produced a variety of doubtful testimony concerning advances which have been made both by English and Dutch navigators, beyond the eighty-fourth degree of north latitude; from which evidence he concludes, that, "the Dutch seamen employed in the Greenland fishery agree with our own countrymen, in never having so much as heard of a perpetual barrier of field-ice to the northward of Spitzbergen in 80 deg. 30m. which, indeed, is one of their most common latitudes for catching whales, that all of them suppose the sea to be generally open in those parts, and many of them proceed several degrees beyond it."

south pole, where there is no land, than the seventy-first degree, that is no nearer than five hundred leagues, though he coasted during the summer round the whole cupola of ice. This distance was only half of the extent of this cupola, and he was enabled to advance so far only by the favor of a bay, opened in a part of its circumference, which every where else was of much greater extent. These bays or openings are formed in the ice only by the influence of the nearest lands, where Nature has distributed sandy zones, to accelerate the fusion of the polar ices at the proper season. Such are, to mention it only by the way, for time will not permit me in this place to unfold all the plans of this admirable architecture; such, I say, are the long belts of sand that encompass North America, in Magellan's Land, and those of Tartary, which commence in Africa at Zara, or the Desert, and terminate in the north of Asia. The winds convey, in summer, the igneous particles with which those zones are filled, towards the poles, where they accelerate the action of the sun upon the ices. It is easy to conceive, independent of experience, that the sands multiply the heat of the sun by the reflections of their specular and brilliant particles, and preserve it a long time in their interstices. It is, at least, certain, that the greatest openings in the polar ices are always found in the direction of hot winds and under the influence of these sandy tracts, as I could demonstrate, were this the proper place. But we may see examples of it without quitting our continent, or even our gardens. In Russia, the rivers and lakes always begin to thaw at their banks, and the fusion of their ice is accelerated in proportion as the strand is more sandy, and as their shores lie in the direction of the south wind. We observe the same effects in our gardens at the end of winter. The ice on the sand of the alleys melts first, then that which is on the earth, and last of all that which is in the basins. The fusion of the latter begins at the brink, and the length of time necessary for its completion is in proportion to the dimensions of the

basins; so that the central part of the ice, which is farthest from the earth, is likewise the last that dissolves.

There cannot, therefore, exist the least doubt that each of the poles is covered with a cupola of ice, conformably to the experience of navigators, and the suggestions of natural reason. We have taken a survey of the dome of our pole, which covers it in winter to the extent of more than two thousand leagues over the continents. It is not so easy to determine its elevation at the centre, and under the very pole, but it must there be of a prodigious height.

Astronomy sometimes presents to us in the heavens an image of it so considerable, that the rotundity of the earth seems to be remarkably affected by it.

I shall take the liberty of quoting what I find on this subject in an English writer, Childrey.* That naturalist supposes, as I do, that the earth is covered with ice at the poles, to such a height that its figure is rendered sensibly oval. This he demonstrates, by two very curious astronomical observations: "What obliges me besides," says he "to embrace this paradox, is, that it serves admirably well to resolve a difficulty of importance which greatly embarrassed Tycho Brahe and Kepler, relative to central eclipses of the moon, which take place near the equator, such as that which Tycho observed in the year 1588, and that observed by Kepler in 1624, of which he thus speaks: 'It is worthy of remark, that this eclipse of the moon, (alluding to that of the 26th of September 1624), like the one observed by Tycho in the year 1588, that is, total and very nearly central, deceived me exceedingly in my calculation; for not only the duration of its total obscurity was very short, but the rest of its duration, before and after the total obscuration was still shorter, as if the earth was eliptical, having a smaller diameter under the equator than from one pole to the other."

The half-melted masses, which are every year detached

* Natural History of England.

from the circumference of this cupola, and which are found very far from the pole, floating on the ocean in the 55th degree, are so lofty, that Ellis, Cook, Martens and other navigators of the north and of the south, the most accurate in their accounts, represent them as high, at least, as ships under sail:* nay Ellis, as we have already mentioned, does not hesitate to give them an elevation of between 1500 and 1800 feet. They unanimously declare, that these islands of ice emit corruscations, which cause their approach to be perceived before they reach the horizon. I shall remark, by the way, that the *aurora borealis* may, probably, owe its origin to these reflections of the polar ices, whose elevation may perhaps some day be determined by the extent of these very lights. Be this as it may, Denis, governor of Canada, speaking of the masses of ice, which descend every summer, from the north to the great bank of Newfoundland, says, that they are higher than the turrets of the church of Notre Dame at Paris, and that they may be seen at the distance of fifteen or eighteen leagues. The cold from them is felt on ship-board at the same distance. "They are, sometimes," says he, "in such numbers, being all impelled by the same wind, that vessels, coming to the land to fish, have fallen in with shoals of them upwards of one hundred and fifty leagues in extent, and coasted along them a day or two, night included, without being able to reach the extremity. In this manner, they proceed in quest of an opening through which to steer the vessel; if

* Several instances are recorded in Cook's Voyages, of islands of this kind, which were twice as high as the main-top gallant-mast-head, or two hundred feet. That encountered by Lieutenant Rion, the history of whose wonderful preservation, in the Guardian frigate, must be familiar to every reader, had advanced so high as the latitude of 45 degrees, though it was then the midsummer of the southern hemisphere. An occurrence of more recent date, the loss of the Lady Hobart Packet, on the 28th of June, 1803, was occasioned by her striking near the great bank of Newfoundland, in the latitude of about 46 degrees north, on one of these islands, which, as described by captain Fellows, appeared to hang quite over the ship, forming a high peak, which must have been at least twice the height of the mast-head, and the length of which he supposes to have been from a quarter to half a mile. T.

they meet with one, they pass it as through a streight. otherwise they are obliged to proceed forward to the very extremity, for the ice entirely blocks up the way. These ices do not melt till they meet the warm water towards the south, or are driven on shore by the wind. Some of them run aground in from twenty-five to thirty fathoms water; judge of their depth, exclusive of what is above the water. Fishermen have assured me that they have seen one aground on the great bank, in forty-five fathoms water, and which was, at least, ten leagues in circumference. It must have been of great height. Ships do not approach these masses of ice, for there is danger lest they should overturn, according as they dissolve on the side most exposed to the heat."

It should be observed, that these ices are already more than half melted when they arrive on the bank of Newfoundland, for, in fact, they scarcely ever go farther. It is the heat of summer that detaches them from the north, and that they are enabled to proceed so far towards the south only by the current of their own waters, which carries them towards the Line, to replace those which the sun is there continually evaporating. These polar ices, of which our mariners see only the skirts and the fragments, must have, at their centre, an elevation proportionate to their extent. For my part, I consider the two hemispheres of the earth as two mountains whose bases are united at the Line, the poles as the icy summits of these mountains, and the seas as rivers flowing from those summits. If then, we represent to ourselves the proportion of the glaciers of Switzerland to their mountains and to the rivers that issue from them, we shall be enabled to form a judgment of that which the glaciers of the poles bear to the whole globe and to the ocean. The Cordilleras of Peru, which are mere mole-hills in comparison to the two hemispheres, and whose rivers are but rills of water compared to the sea, have selviges of ice from twenty to thirty leagues in extent, bristled in their centre with pyramids between

twelve and fifteen hundred fathoms in height. What then must be the central elevation of the two domes of polar ice, which, in winter, have bases two thousand leagues in diameter? I have no doubt that their thickness at the poles caused the earth to appear oval, in the central eclipses of the moon, observed by Kepler and Tycho Brahe.

From this configuration I likewise deduce the following conclusion: if the height of the polar ices is capable of altering the form of the globe in the heavens, their weight must be sufficiently considerable to affect its motion in the ecliptic. There is, accordingly, a very singular coincidence between the motion, by which the earth alternately presents its two poles to the sun in one year, and the alternate effusions of the polar ices which take place in the course of the same year. I shall explain the manner in which I conceive this motion of the earth to be the effect of those effusions. Admitting with astronomers the laws of attraction among the stars, the earth must certainly present to the sun which attracts it, the heaviest part of its globe. Now this heaviest part must be one of its poles, when it is surcharged with a cupola of ice, of an extent of two thousand leagues, and of an elevation superior to that of the continent. But as the ice of this pole, which its gravity inclines towards the sun, dissolves in proportion to its vertical approximation to that luminary, and as, on the contrary, the ice of the opposite pole increases in proportion to its removal from him, the necessary consequence must be, that as the first poles becomes lighter, and the second heavier, the centre of gravity passes alternately from one to the other; and this reciprocal preponderance must occasion that motion of the globe in the ecliptic, which produces summer and winter.

Another consequence of this alternate preponderance is, that our hemisphere, containing more land than the southern hemisphere, and being consequently heavier, must incline towards the sun for a greater length of time; and this is actually the case, for our summer is longer by five

or six days than our winter. A farther consequence is, that our pole cannot lose its centre of gravity, unless the opposite pole becomes charged with a weight of ice superior to the gravity of our continent and the ices of our hemisphere. This is likewise agreeable to the fact; for the ices of the south pole are more elevated and more extensive than those of the north; as mariners have not been able to penetrate farther than the 71st degree of south latitude, whereas they have advanced to the 82nd degree north. Here we may discover one of the reasons for which Nature has divided the globe into two hemispheres, one of which contains the greatest portion of land, and the other the greatest quantity of water, in order that the motion of the globe might possess at the same time consistency and versatility. It is also obvious, why the south pole is placed immediately in the centre of the seas, far from any land, that it might collect a greater mass of marine evaporations, and that these evaporations, accumulated in the form of ice around it, might balance the weight of the continents with which our hemisphere is surcharged.

And here I expect to be opposed by a very powerful objection. It is this: if the polar effusions occasioned the motion of the earth in the ecliptic, a moment must come, in which its two poles being in equilibrio, it could present its equator only to the sun.

I have nothing, I acknowledge, to reply to this difficulty, unless that we must have recourse to the immediate will of the Author of Nature, who instantly destroys this equilibrium, and restores the alternate preponderance of the poles, by laws with which we are not acquainted. This concession can no more weaken the probability of the hydraulic cause which I apply to it, than that of the principle of the attraction of the celestial bodies, which serves to explain it, I venture to say, with much less clearness. This very attraction would soon deprive the earth of all manner of motion, were it the only power that acted on the heavenly bodies. If we would be candid, it is in the

acknowledgment of an intelligence superior to our own that all the mechanical causes of our most ingenious systems must terminate. The will of God is the *ultimatum* of all human knowledge.

From this objection, however, I shall deduce consequences that will diffuse new light over the ancient effects of the polar effusions, and on the manner in which they might have produced the deluge.*

If then, we were to suppose an equilibrium established between the poles, and the earth constantly presenting its equator to the sun, it is extremely probable that it would be set on fire. In fact, according to this hypothesis, the waters which are under the equator being evaporated by the continual action of the sun, would be irrevocably fixed in ice at the poles, beyond the influence of that luminary, which would be constantly on their horizon. The continents, being thus dried up under the torrid zone, and exposed to a heat increasing every day, would speedily

* The priests of Egypt, as we are informed by Herodotus, maintained, that the sun had several times deviated from his course; so that our hypothesis is very far from new. They, perhaps, drew from it the same conclusions. So much, at least, is certain, that they believed the earth would one day perish by a general conflagration, as it had already been destroyed by an universal deluge.—I believe it was one of their kings, who, as a security against either the one or the other of these events, ordered two pyramids to be erected, one of brick, as a preservative against fire, and the other of stone, as a preservative against water. The opinion of a future conflagration of Nature is diffused among many nations. But effects so terrible, which would soon result from the mechanical causes, by which man attempts to explain the laws of Nature, cannot take place unless by the immediate command of the Deity. He preserves his works with the same wisdom as he created them. Astronomers have, for a long series of ages, observed the annual motion of the earth in the ecliptic, but they have never seen the sun only a single second on one side of the tropics, or on the other. God governs the world by variable powers, and produces from them invariable harmonies. The sun neither moves in the circle of the equator, which would set the earth on fire, nor in that of the meridian, which would deluge it with water; but his course is traced in the ecliptic, where it describes a spiral line between the two poles of the world. In his harmonious career he dispenses cold and heat, drought and humidity; and from these powers, individually so destructive, he produces latitudes so varied, and so temperate, over all the globe, that an infinite number of creatures of extreme delicacy, find on it all the degrees of temperature adapted to their frail existence.

take fire. Now, if it be probable that the earth would perish by fire, were the motion of the sun confined to the equator, it is no less probable that it would be deluged with water, were his course in the direction of the meridian. Opposite means produce contrary effects.

We have just seen, that the simple alternate effusions of part of the polar ices, were sufficient to renovate all the waters of the ocean, to produce all the phenomena of the tides, and to effect the balancing of the earth in the ecliptic. We believe them to be capable of inundating the whole globe were they to be dissolved all at the same time.—Let it be remarked, that the effusion of only part of the ice on the Cordilleras of Peru, is sufficient to produce the annual overflows of the Amazons, the Oronoko, and several other great rivers of the new world, and to inundate a large portion of Brasil, Guiana, and the southern continent of America; that the melting of part of the snows on the Mountains of the Moon, in Africa, occasions every year, the inundations of the Senegal, contributes to those of the Nile, and overflows vast regions in Guinea, and the whole of Lower Egypt; and that similar effects are annually produced, by similar causes, in a considerable portion of southern Asia, in the kingdoms of Bengal, Siam, Pegu, and Cochin-China, and in the tracts watered by the Tigris, the Euphrates, and other rivers of Asia, which have their sources in chains of mountains perpetually covered with ice; those of Taurus and Imaus. Who, then, can doubt, that the total effusion of the ices of the two poles, is sufficient to overthrow the bed of the ocean, and entirely to inundate the two continents? Must not the elevation of those two cupolas of polar ice, vast as oceans, far surpass the height of the most lofty lands, since the mere fragments of their extremities, when half dissolved, are as high as the turrets of Notre Dame, and even rise to the height of fifteen or eighteen hundred feet above the level of the sea? The ground on which Paris stands, which is forty leagues from the shore of the sea, is not more than twenty

two fathoms above the level of neap-tides, or eighteen above the highest spring-tides. A great portion both of the old and of the new world is of a much inferior elevation.

For my part, if I may venture to declare my opinion, I ascribe the general deluge to a total effusion of the polar ices; to which may be added that of the icy mountains, as the Cordilleras and Taurus, the chains of which are from twelve to fifteen hundred leagues in length, and twenty to thirty in breadth, with an elevation of between twelve and fifteen hundred fathoms. To these may be still farther added, the waters diffused over the atmosphere in clouds and imperceptible vapors, which could not fail to form a very considerable mass were they collected on the earth.

I suppose then, that, at the period of this catastrophe, the sun, deviating from the ecliptic, advanced from south to north,* and pursued the direction of one of the meridians, which passes through the middle of the Atlantic Ocean and the South Sea. In this course he heated only a zone of water, fluid as well as frozen, which, in the greatest part of its circumference, is four thousand five hundred leagues in breadth. He extracted belts of fogs and haze, which accompany the melting of all ices, from the chain of the Cordilleras, from the different branches of the icy mountains of Mexico, of Taurus, and of Imaus, which, like them, run north and south; from the sides of Atlas, the summits of Teneriff, of Mount Jura, of Ida, of Lebanon, and of all the mountains covered with snow, which were exposed to his direct influence. With his vertical

* I find an historical testimony in favor of this hypothesis, in the first book of the history of China, by Father Martini. "During the reign of Yaus, the seventh emperor, the annals of the country relate, that the sun was six days together without setting, and that a general conflagration was apprehended. The result, on the contrary, was a deluge, which inundated the whole of China." The epochs of this Chinese deluge and of the general deluge are in the same century. Yaus was born 2358 years before Christ, and according to the Jewish computation, the general deluge happened 2348 years before the same period.—The Egyptians likewise had traditions respecting these ancient alterations in the course of the sun.

flame he quickly set on fire the constellation of the Bear, and that of the cross of the south; and instantly the vast domes of the polar ices reeked on every side. All these vapors, combined with those which rose from the ocean, covered the earth with an universal rain. The action of the sun's heat was farther augmented by that of the scorching winds from the sandy zones of Africa and Asia, which, blowing, like all winds, towards the parts of the earth where the air was most rarefied, rushed, like battering rams of fire, towards the poles of the world, on which the sun acted with all his energy.

Innumerable torrents immediately burst from the north pole, which was then the most loaded with ice, as the deluge commenced on the 17th of February, the season of the year, when winter exerts its utmost influence over our hemisphere. These torrents issued at once from all the flood-gates of the north; from the streights of the sea of Anadir; from the deep gulph of Kamschatka; from the Baltic Sea; from Waigats' Streights; from the unknown sluices of Spitzbergen and Greenland; from Hudson's Bay, and that of Baffin, which is still more remote. Their roaring waters rushed partly, through the channel of the Atlantic Ocean, tearing up its very foundations, thence drove impetuously beyond the line, and their collateral counter-tides, returning by the same route, impelled and increased by the currents of the south pole, which had been set a flowing at the same time, poured upon our coasts the most tremendous of tides. They rolled along in their billows the spoils of the ocean situated between the old and the new world. They spread vast beds of the shell-fish, which pave the bottom of the seas of the Antilles and Cape de Verd Islands, over the plains of Normandy, and even carried those which adhere to the rocks of the Streights of Magellan as far as the fields watered by the Saône. Encountered by the general current of the pole, they formed, at their confluences, horrible counter-currents, which conglomerated in their vast whirlpools, sands, flints,

and marine bodies, into the masses of indigested stone, into the irregular hills, and pyramidal rocks, scattered over many parts of France and Germany. These two general currents of the poles, meeting between the tropics, tore up, from the beds of the seas, vast banks of madrepores, and threw them entire on the shores of the adjacent islands, where they exist to this day.*

In other places, their waters, slackening towards the extremity of their course, spread over the surface of the earth in vast sheets, and deposited, by repeated undulations, in horizontal layers, the wreck and the viscidities of an infinite number of fishes, of sea-urchins, sea-weed, shell-fish, corals; and formed them into strata of sand, pastes of marble, of marl, of gypsum, and of calcareous stones, which, at this day, constitute the soil of the greatest portion of

* I have seen in the Isle of France vast beds of madrepores, from seven to eight feet in height, resembling ramparts, left dry, more than three hundred paces from the shore. The ocean has left in every country traces of its ancient incursions. On the strand of the district of Caux has been found a very large shell-fish, peculiar to the Antilles, called the *Thuilée;* in the vineyards of Lyons, that denominated the Cock and Hen, which is taken alive in no sea whatever but the Streights of Magellan; and the teeth and jaws of sharks have been discovered in the sands of Estampes. Our quarries are filled with the spoils of the southern ocean. On the other hand, if we may believe the memoirs of Father Le Comte, the Jesuit, there are in China, strata of vegetable earth, from three to four hundred feet in depth. To these the missionary ascribes, and with good reason, the extreme fertility of that country.—Our best soils in Europe are not more than three or four feet deep. If we had geographical charts, which should represent the different strata of fossil shell-fish, we might discover in them the directions, and the focuses of the ancient currents that deposited them. I shall pursue this idea no farther; but here is another, which may present new objects of curiosity to the learned, who set a greater value on the monuments of man, than on those of Nature. It is this. As we find in the fossils of these western regions, a multitude of monuments of the sea, those of our ancient continent might, perhaps, be traced in those strata of vegetable earth, three or four hundred feet deep, in the countries of the east. In the first place it is certain, from the testimony of the missionary quoted above, that pit-coal is so common in China, that most of the Chinese make use of no other fuel. Now we know, that pit-coal owes its origin to forests, which have been buried in the bosom of the earth. It is, therefore, possible, that, amidst these wrecks of vegetable creation, might be found those of terrestrial animals, of men, and of the early arts of the world, which possessed any degree of solidity.

Europe. Every layer of our fossils was the result of an universal tide. While the effusions of the polar ices covered the western extremities of our continent with the spoils of the ocean, they spread over its eastern extremities those of the land, and deposited, on the soil of China, strata of vegetable earth, from three to four hundred feet in depth. Then it was, that all the plans of Nature were reversed. Vast islands of floating ice, loaded with white bears, ran aground among the palm-trees of the torrid zones; and the elephants of Africa were tossed amid the pine-forests of Siberia, where their huge bones are still found to this day. The vast plains of the land, inundated by the waters, no longer presented a career to the nimble courser, and those of the sea, now agitated with fury, ceased to be navigable. In vain did man think of finding an asylum on the lofty mountains. A thousand torrents, pouring from their sides, mingled the confused noise of their waters with the howling of the wind, and the roaring of the thunder. Black tempests gathered round their summits, and spread a night of horror over the face of day. In vain did he turn an eager eye towards the quarter of the heavens where Aurora was accustomed to appear; he he perceived in the whole circuit of the horizon, nothing but long piles of clouds, heaped upon each other; pale lightnings gleamed amid their murky and endless battalions, and the luminary of day, veiled by their lurid corruscations, emitted scarcely sufficient light, to afford a glimpse in the firmament of his bloody disk, traversing new constellations. Amid this disorder of the heavens, man began to despair of the safety of the earth. Unable to find within himself the last consolation of virtue, that of perishing free from the conciousness of guilt, he sought, at least, to conclude his last moments on the bosom of love or of friendship. But in that guilty age, when all the sentiments of Nature were extinguished, friend repelled friend, the mother her child, the husband his wife. Every thing was swallowed up by the waters; cities, palaces,

majestic pyramids, triumphal arches, decorated with the trophies of kings; and ye, also, which ought to have survived even the ruins of a world, ye peaceful grottoes, tranquil groves, humble cottages, the retreats of innocence! No vestige was left on the earth, either of the glory, or of the felicity of mortals, in those days of vengeance, when Nature involved in universal ruin all the monuments of her own production.

Such convulsions, of which traces, without number, still remain on the surface and in the bosom of the earth, cannot possibly have been produced merely by the action of an universal ruin.

I am aware that the letter of scripture is explicit on this subject: but the circumstances combined with it by the sacred historian, seem to admit the means, which, according to my hypothesis, effected this terrible revolution.

It is said, in the book of Genesis, that it rained over the whole earth forty days and forty nights.—This rain, as we have seen, was the result of the vapors, produced by the melting of the ices, both of the land and sea, and by the zone of water over which the sun then passed in the direction of the meridian. As to the period of forty days, that time appears to me sufficient for the vertical action of the sun on the polar ices, to reduce them to the level of the sea; since the proximity of the sun to the tropic of Cancer, for three weeks, is capable of melting a great portion of those on our pole. Nay, at that season, nothing more is wanting than a few puffs of the south, or south-west wind, for some days, to disengage the ice from the southern coast of Nova Zembla, and to clear the streights of Waigats, according to the observations of Martens, Barentz, and other navigators of the north.

It is farther said in Genesis, that, "all the fountains of the great deep were broken up, and the windows of heaven were opened." The expression, *the fountains of the great deep*, can, in my opinion, be applied only to an effusion of the polar ices, which are the real sources of the sea; as

the effusions of the ice on mountains are the sources of all great rivers. The expression, *the windows*, or flood-gates, *of heaven*, likewise denotes, if I am not mistaken, the universal solution of the waters diffused through the atmosphere, which are there kept suspended by the cold, the focuses of which were then destroyed at the poles.

We are afterwards informed, that, after it had rained forty days, "God made a wind to blow, which caused the waters to return from off the earth." This wind, undoubtedly, wafted towards the poles the evaporations of the ocean, which there fixed themselves anew in ice. The Mosaic account then adds circumstances, which seem to refer all the effects of this wind to the poles of the world; for it is said: "The fountains of the deep, and the windows of heaven, were stopped, and the rain from heaven was restrained; and the waters returned from off the earth continually,* and after the end of one hundred and fifty days the waters were abated."

The agitation of these waters, up and down, perfectly agrees with the motion of the seas, from the line to the poles, which must then have been performed without any obstacle, as the globe was, at that time, entirely aquatic; and, as it may be supposed, that its annual balancing in the ecliptic, of which the polar ices are at once the moving power and the counterpoise, had then degenerated into a diurnal titubation, the consequence of its first motion. These waters, therefore, retired from the ocean, when they were anew converted into ice at the poles; and it is worthy of remark, that the space of one hundred and fifty days, which they took to fix themselves, is precisely the time which each of the poles annually employs to load itself with its ordinary congelations.

We find, besides, in the sequel of this account, expres-

* The French version says: *The waters, being agitated up and down, returned*, &c. an expression much more favorable to the hypothesis of our author, and of which he does not fail to avail himself in the succeeding sentence. T.

sions analogous to the same causes: "The Lord said in his heart, while the earth remaineth, seed-time and harvest, and cold and heat, and summer and winter, and day and night, shall not cease." No more can there be any thing superfluous in the words of the Author of Nature, than in his works. The deluge, as we have already observed, began on the seventeenth day of the second month of the year, which was among the Hebrews, as with us, the month of February. Man had, by this time, committed the seed to the earth, but he reaped no harvest. In that year, cold succeeded not to heat, nor summer to winter, because there was neither winter nor cold, in consequence of the general fusion of the polar ices, which are their natural focuses; and the night, properly so called, did not follow the day, because there was then no night at the poles, where there is alternately one of six months; for the sun, pursuing the direction of a meridian, illumined the whole earth, as is the case when he is at the equator

To the authority of Genesis, I shall add a very curious passage, from the thirty-eighth chapter of the book of Job, describing the deluge and the poles of the world, with the principal characters of them, which I have just exhibited.

Verse 4. Ubi eras quando ponebam fundamenta terræ? Indica mihi si habes intelligentiam.

5. Quis posuit mensuras ejus, si nôsti? vel quis tetendit super eam lineam?

6. Super quo bases illius solidatæ sunt? aut quis demisit lapidem angularem ejus,

7. Cum mane laudarent simul astra matutina, et jubilarent omnes filii Dei?

8. Quis conclusit ostiis* mare, quando erumpebat quasi de vulvâ procedens:

* Though the sense, which I attach to this passage, does not greatly differ from that given it by M. de Naci, in his excellent translation of the Bible, yet there are several expressions, to which I assign a meaning contrary to that of this learned gentleman.

9. Cum ponerem nubem vestimentum ejus, et caligine illud, quasi pannis infanti obvolverem?

10. Circumdedi illud terminis meis: et posui vectem et ostia.

11. Et dixi: Usque huc venies, et non procedes amplius; et hic confringes tumentes fluctus tuos.

12. Numquid post ortum tuum præcepisti diluculo, et ostendisti auroræ locum suum?*

13. Et tenuisti concutiens extrema terræ, et excussisti impios ex ea?

14. Restituetur ut lutum signaculum† et stabit sicut vestimentum.

15. Auferetur ab impiis lux sua, et brachium excelsum confringeretur.

16. Numquid ingressus es profunda maris, et in novissimis‡ abyssi deambulasti?

1stly. *Ostium* properly signifies an opening, disgorging, sluice, flood-gate, mouth; and not a barrier, according to Saci's translation. Observe how admirably the sense of this and the following verse coincides with that state of constraint and inaction, to which the sea is restricted at the poles, enveloped in clouds and darkness, like an infant in swaddling-clothes, in his cradle. They are likewise expressive of the fogs, which, as is well known to all the navigators of the north, surround the base of the polar ices.—2dly The preceding epithets, of the *foundations of the earth*, of the *fastening of the foundations*, of *stretching the line upon it*, of *doors* from which the sea issues as from a womb, point particularly to the poles of the world, whence the seas flow over the rest of the globe. The epithet of *corner-stone*, seems, likewise, to denote in a more especial manner, the north pole, which is distinguished by its magnetic attraction from all the other points of the earth.

* *Auroræ locum suum*, the place of the Aurora. Perhaps this may allude to the *Aurora borealis*. The cold of the poles produces the Aurora; for there is scarcely any such thing between the tropics. The pole, therefore, is, properly speaking, the natural place of the Aurora. The expression in the following verse, *tenuisti concutiens extrema terræ*, obviously characterizes the total effusions of the polar ices, situated at the extremities of the earth, which occasioned the general deluge.

† *Restituetur ut lutum signaculum.* This verse is very obscure in Saci's translation. To me it appears to be descriptive of the fossil shell-fish, which, over the whole earth, are monuments of the deluge

‡ *In novissimis abyssi*, at the sources of the abyss. Saci has translated it, "in the extremities of the abyss." This version destroys

17. Numquid apertæ sunt tibi portæ* mortis, et ostia tenebrosa vidisti?

18. Numquid considerasti latitudinem terræ?† Indica mihi si nosti omnia.

19. In qua viâ lux habitet, et tenebrarum quis locus sit.

20. Ut ducas unumquodque ad terminos suos, et intelligas semitas domûs ejus.

21. Sciebas tunc quod nasciturus esses? et numerum dierum tuorum noveras?

22. Numquid ingressus es thesauros nivis, aut thesauros grandinis aspexisti?

23. Quæ præparavi in tempus hostis, in diem pugnæ et belli?

COMMON VERSION OF THE BIBLE.	TRANSLATION OF THE AUTHOR'S VERSION.
4. Where wast thou when I laid the foundations of the earth? Declare if thou hast understanding.	4. Where wast thou when I laid the foundations of the earth? Tell it me if thou hast any knowledge.
5. Who hath laid the measures thereof, if thou knowest? Or who hath stretched the line upon it?	5. Knowest thou who it is that hath determined its dimensions, or who hath regulated its levels?

the correspondence of this expression with that of the other polar characters, so clearly explained before; and the antithesis of *novissima*, with that of *profunda maris*, which precedes it, by affixing the same meaning to both. Antithesis is a figure very frequently employed by the orientals, and particularly in the book of Job. *Novissima abyssi* literally signifies the places which renovate the abyss, the sources of the sea, and consequently the polar ices.

* *Portæ mortis et ostia tenebrosa*, the doors of death, and the gates of darkness. The poles, which are uninhabited, are truly the gates of death. The epithet *tenebrosa*, here denotes the nights of six months duration, which prevail at the poles. This signification is farther confirmed in the following verses, by *locus tenebrarum*, the place of darkness, and by *thesauros nivis*, the reservoirs of snow. The poles are, at once, the places of darkness and of the aurora.

† *Latitudinem terræ*. Literally: Hast thou considered the latitude of the earth? In fact, all the characters of the pole could be known only to those, who had traversed the earth in the direction of its latitude. There were, at the time of Job, many Arabian travellers who went to the east, to the west, and to the south, but very few who had travelled northward, that is, in latitude.

6. Whereupon are the foundations thereof fastened? Or who laid the corner-stone thereof?

7. When the morning-stars sang together, and all the sons of God shouted for joy.

8. Or who shut up the sea with doors when it brake forth, as if it had issued out of the womb?

9. When I made the cloud the garment thereof, and thick darkness a swaddling-band for it.

10. And brake up for it my decreed place, and set bars and doors,

11. And said, hitherto shalt thou come, but no farther: and here shall thy proud waves be staid.

12. Hast thou commanded the morning since thy days? and caused the day-spring to know his place,

13. That it might take hold of the ends of the earth, that the wicked might be shaken out of it.

14. It is turned as clay to the seal, and they stand as a garment,

15. And from the wicked their light is with-holden, and the high arm shall be broken,

6. On what are its basis secured, or who laid its corner-stone,

7. When the stars of heaven praised me in concert, and all the sons of God were transported with joy?

8. Who appointed gates to the sea, to shut it up again when it inundated the earth, rushing as from the womb of its mother;

9. When I gave it clouds for a covering, and enveloped it in darkness, as a child is wrapped in swaddling-clothes?

10. I shut it up within bounds that are known to me; I have provided for it a bulwark and sluices,

11. And I said to it: Thus far shalt thou come, but thou shalt pass no farther, and here thou shalt break the pride of thy waves.

12. Is it thou who, in opening thine eyes to the light, hast commanded the dawning of day, to appear, and hast appointed to Aurora the place where she should arise?

13. Is it thou, who holding in thy hands the extremities of the earth, hast convulsed it, and shaken the wicked out of it?

14. Minute monuments innumerable, of this devastation, shall remain impressed on its surface, in the clay, and shall remain like its garment.

15. The light of the wicked shall be taken from them, and their uplifted arm shall be broken.

16 Hast thou entered into the springs of the sea? or hast thou walked in the search of the depth?

17. Have the gates of death been opened unto thee? or hast thou seen the doors of the shadow of death?

18. Hast thou perceived the breadth of the earth? Declare if thou knowest it all.

19. Where is the way where light dwelleth? and as for darkness, where is the place thereof?

20. That thou shouldest take it to the bound thereof. and that thou shouldest know the paths to the house thereof?

21. Knowest thou it because thou wast then born? or because the number of thy days is great?

22. Hast thou entered into the treasures of the snow? Or hast thou seen the treasures of the hail?

23. Which I have reserved against the time of trouble, against the day of battle and war?

16. Hast thou penetrated to the bottom of the sea, and hast thou walked over the sources which renovate the abyss?

17. Have these doors of death been opened to thee, and hast thou seen their gloomy flood-gates?

18. Hast thou observed where the latitude of the earth terminates? If thou knowest all these things, declare them unto me.

19. Tell me where is the habitation of light, and what is the place of darkness,

20. That thou may'st conduct them, each to its destination, when thou shalt know the way that leads to their habitations.

21. Didst thou know, when these things already existed, that thou shouldest thyself be born, and wast thou acquainted with the number of thy days?

22. Hast thou entered into the treasures of the snow, and beheld those tremendous reservoirs of hail,

23. Which I have prepared against the time of the enemy, and for the day of war and of battle?

The reader, I flatter myself, will not be displeased with me for having deviated a little from my subject, that I might exhibit to him the agreement between my hypothesis and the traditions of the sacred writings; and particularly those, though somewhat obscure, of a book, perhaps, the most ancient that exists. It is the opinion of some of our most learned divines, that Job wrote prior

to Moses. None ever painted Nature with greater sublimity.

We may farther assure ourselves of the general effect of the polar effusions on the ocean, by the particular effects of the ices of the mountains on the lakes and rivers of the continent. I shall introduce some instances of the latter; for it is a weakness, natural to the human mind, to love to particularize all the objects of its studies. This is the reason why it seizes the laws of Nature much more quickly in small objects, than in those of magnitude. Addison, in his Remarks on Misson's Travels in Italy, says, there is, in the lake of Geneva, in summer, towards evening, a kind of flux and reflux, caused by the melting of the snows, which fall into it in much greater quantity in the afternoon, than at the other times of the day. He then explains, with great clearness, as he generally does, by means of the alternate effusions of the snows on the mountains of Switzerland, the intermittence of certain springs of that country, which flow only at particular hours of the day.

If this digression were not already too long, I could demonstrate, that there is neither spring, nor lake, nor river, subject to a particular flux and reflux, where it is not owing to icy mountains situated at their sources. I shall add but a very few words concerning those of the Euripus, the frequent and irregular movements of which so greatly puzzled the philosophers of antiquity, but which may be so easily explained by means of the icy effusions of the neighbouring mountains. The Euripus, it is well known, is a streight of the Archipelago, separating the ancient Bœotia from the island of Eubœa, now Negropont. About the middle of this streight, where it is narrowest, the current is seen to run sometimes to the north, sometimes to the south, ten, twelve, fourteen times a day, with the rapidity of a torrent. These multiplied, and very often unequal movements, cannot be referred to the tides of the ocean, which are scarcely perceptible in the Mediterra-

nean. A Jesuit, quoted by Spon,* endeavours to reconcile them with the phases of the moon; but admitting the table of them, which he gives, to be accurate, still their regularity and irregularity would remain to be explained. He refutes Seneca, the tragic poet, who attributes to the Euripus but seven fluxes in the day-time only; and adds, I know not from what authority, that in the Persian Gulf, the flux never takes place but in the night, and that under the arctic pole, on the contrary, it is perceptible twice a day, without being ever observed in the night. This, says he, is not the case with the Euripus. I shall observe, by the way, that his remark, with respect to the pole, supposing it to be correct, is an additional confirmation that its two diurnal fluxes are the effects of the sun, which acts only during the day on the two icy extremities of the continents of the new world and of the old. As to the Euripus, the variety, the number, and the impetuosity of its fluxes, evince that they, in like manner, have their origin in the icy mountains, situated at different distances, and under different aspects of the sun. For, according to the same Jesuit, the island of Eubœa, which is on one side of the streight, has mountains covered with snow for six months of the year; and we know that Bœotia, which is on the other side, contains several mountains of equal elevation, and even some which are covered with ice all the year round, such as Mount Œta. If these fluxes and refluxes of the Euripus occur as frequently in summer as in winter, of which we are not informed, the cause must be ascribed to the rains which fall, during that season, on the summits of those lofty collateral mountains.

I shall enable the reader to form an idea of these not very apparent causes of the movements of the Euripus, by here transcribing what Spon elsewhere relates concerning the lake of Livadia, or Copaide, in its vicinity. This lake receives the first fluxes of the icy effusions of the mountains of Bœotia, and, undoubtedly, communicates

* Travels in Greece and in the Levant, vol. II. p. 340

them to the Eupirus, through the mountains, which separate them from it. "It receives," says he, "several small rivers, the Cephisus, and others, that water this beautiful plain, which is about fifteen leagues in circumference, and abounds in corn and pasturage. Accordingly, it was formerly one of the most populous districts of Bœotia. But the waters of this lake are sometimes swelled to such a degree by the rains and melted snows, that they once inundated two hundred villages in the plain. They would even be capable of producing a regular annual inundation, if Nature, aided perhaps by art,* had not contrived a passage for them

* Spon undoubtedly had not reflected on what he was about to say, when he suggested the idea, that it is possible for art to assist Nature in the construction of five subterraneous canals, each ten miles in length, through a solid rock. These subterraneous canals are frequently met with in mountainous countries, of which I could adduce a thousand instances. They afford a medium for the circulation of the waters, which could not otherwise find a passage through the chains of mountains. Nature pierces the rocks for the passage of rivers, as she has pierced several of the bones of the human body for the communication of the veins. I leave the reader to pursue this new idea. I have said sufficient to convince him, that this globe is not the production of disorder or of chance.

I shall conclude these observations with a reflection concerning the traveller whom I have been quoting, and his colleague. Spon was a Frenchman, and George Wheeler a native of England. They travelled in company over the Archipelago. The former brought home with him a collection of Greek epitaphs and inscriptions, which obtained great applause from the literati of his age. The latter has given us the names and characters of many very curious plants, which grow on the ruins of Greece, and, in my opinion, diffuse a very affecting interest over his narrative. He is but little known among us. According to the titles which these writers assumed, Jacob Spon was a physician, a member of the society of Lyons, and an eager investigator of the monuments of men. George Wheeler was a gentleman, and an enthusiastic admirer of those of Nature. Their tastes, it may be thought, should have been the very reverse; the gentleman ought to have been fond of monuments, and the physician of plants; but as we shall observe, in the sequel of these Studies, our passions spring from contrarieties, and are almost always opposite to our conditions. It was in conformity to this harmonic law of Nature, that, though one of these travellers was English, and the other French, they lived in perfect union. I remark to their honor, that they mutually speak of each other in terms of high panegyric.—Ministers of state, would you form societies which shall be cordially united among themselves, do not assort academicians with academicians, soldiers with soldiers, merchants with merchants, monks with monks: but associate men of opposite conditions, and you will see the utmost harmony prevail among them, provided you exclude the ambitious, which is not an easy task; for ambition is one of the first vices which our mode of education instils.

through five capacious channels, under the adjacent mountain of Euripus, between Negropont and Talanda, by which the water of the lake is engulphed and discharged into the sea, on the opposite side of the mountain. The Greeks call this place Catabathra. Strabo, speaking of this lake, says, nevertheless, that, in his time, it appeared to have no outlet, excepting that the Cephisus sometimes forced a passage under ground. But it is only necessary to read his description of the changes which take place in this morass, not to be surprized at this circumstance. Mr. Wheeler, who went to examine the spot, after my departure from Greece, says, that it is one of the greatest curiosities in the country, the mountain being nearly ten miles broad, and almost entirely composed of solid rock."

I have no doubt that many objections may be started against the rapid explanation which has been given of the courses of the tides, of the earth's motion in the ecliptic, and of the general deluge from the effusions of the polar ices; but, I have the courage to repeat it, these physical causes exhibit a higher degree of probability, of simplicity, and of conformity to the general course of nature, than the astronomical causes, so far remote from us, by which they are explained. I leave the decision of this point to the impartial reader. If he is on his guard against the novelty of systems, not yet extolled by panegyrists, he ought to be no less so against the antiquity of those which have many such supporters.

Let us now return to the form of the bason of the ocean. Two principal currents cross it from east to west, and from north to south. The first coming from the south pole, sets in motion the Indian sea, and directed by the eastern extent of the old continent, runs from east to west, and from west to east, in the course of the same year, forming in the East Indies, what are denominated monsoons. This has been already remarked, but an observation which we have not yet made, though it well deserves to be brought forward, is, that all the bays, creeks,

and mediterraneans, of southern Asia, such as the gulphs of Siam, of Bengal, and of Persia, the Red Sea, and a great number of others, are directed relatively to this current, north and south, so as not to be met by it. In like manner the second current, issuing from the north pole, gives a contrary movement to our ocean; and being confined between America and our continent, it runs from the north to the south, and returns from the south to the north, in the same year, forming, like that of India, real monsoons, though they have not been observed by navigators. All the bays and mediterraneans of Europe, as the Baltic, the Channel, the Bay of Biscay, the Mediterranean, properly so called, and all those on the east coast of America, as Baffin's and Hudson's Bays, the gulph of Mexico, and many others, are directed, relatively to it, east and west; or to speak with more precision, the axes of all the openings into the land, in the old and new worlds, are perpendicular to the axes of those general currents, so that their mouth only is crossed by them, and their depth is not exposed to the impulsions of the general movements of the ocean. It is owing to the calmness of bays, that so many vessels repair thither in quest of anchorage; and it is for the same reason, that Nature has placed at the bottoms of them the mouths of most rivers, as we have before observed, that their waters might be discharged into the ocean, without being driven back by the direction of its currents. She has even employed similar precautions for the security of the small rivers that empty themselves into the sea. There is not an experienced seaman who does not know, that there is scarcely a creek which has not its rivulet. But for the wisdom of these dispositions, the streams designed to water the earth, must frequently have overwhelmed it with destructive inundations.

Nature employs still other means to secure the courses of rivers, and especially to protect their mouths. Of these the principal are islands. Islands present to rivers channels, which have different directions, that, if the winds or

the currents of the sea should block up one of their outlets, their waters may find a passage through the other. It may be remarked, that she has multiplied islands at the mouths of rivers most subject to these two inconveniencies, as at that of the Amazons, incessantly exposed to the east wind, and situated on one of the most prominent parts of America. They are so numerous, and form so many channels, which have such different courses, that one of their outlets points north-east, and another south-west, and that the former is more than one hundred leagues distant from the latter. Fluviatic islands are not formed, according to the current opinion, of the congregated substances washed down by rivers; most of them, on the contrary, are considerably elevated above the level of those rivers, and many even contain mountains and streams of their own. These elevated islands are frequently met with at the confluence of a large river, and an inferior stream. They serve to facilitate their communication, and to open a two-fold passage for the current of the river. Accordingly, whenever you see islands along the banks of a river, you may be assured that there is some lateral, inferior river, or rivulet, in the vicinity. Many of these confluent streams have, indeed, been dried up by the imprudent labors of man; but you will invariably find, opposite to the islands which divided their confluence, a correspondent valley, in which you may trace their ancient channel. There are likewise islands of this description, in the middle of the courses of rivers, in places exposed to the winds. I shall observe, by the way, that we deviate widely from the intentions of Nature, when we unite the islands of a river to the adjacent continent; for, in this case, its waters flow only through a single channel, and when the winds blow in opposition to its stream, they cannot escape, either to the right or to the left; they swell, overflow, inundate the plain, carrying away bridges, and causing many other disasters, now so frequent in our cities.

We do not, then, find bays and gulphs at the extremi-

bes of the currents of the ocean, but, on the contrary, sands. At the extremity of the great eastern current of the Indian Ocean, is placed the island of Madagascar which protects Africa from its violence. The islands of Terra del Fuego, in like manner, defend the southern extremity of America, at the confluence of the eastern and western seas of the southern hemisphere. The numerous archipelagos of the Indian Ocean, and of the South Sea, are situated near the Line, where the two general currents of the north and south seas meet. It is also with islands, that Nature protects the outlets of bays and mediterra neans. Great Britain and Ireland cover that of the Baltic the islands of Welcome and Good Fortune protect Hudson's Bay; the island of St. Laurence defends the entrance of the gulph of that name; the chain of the Antilles covers the gulph of Mexico; and the islands of Japan, the double gulph formed by the peninsula of Corea with the adjacent regions. All currents set towards islands. Most of them, for this reason, are noted for their prodigious swells and gusts of wind: such are the Azores, the Bermudas, the island of Tristan d'Acunha, and others. Not that they contain within themselves the causes of these phenomena, but because they are placed in the focuses of the revolutions of the ocean, and even of the atmosphere, for the purpose of weakening their effects. They are in situations nearly similar to those of capes, all of which are likewise celebrated for their tempests; as Cape Finisterre, at the extremity of Europe; the Cape of Good Hope, at that of Africa; and Cape Horn, at that of America. Hence comes the sea-proverb, *to double the cape*, to signify the surmounting of some great difficulty. Thus the ocean, instead of bearing upon the receding parts of the continent, sets in, on the contrary, against those which are the most prominent; and it must speedily have destroyed them, had they not been fortified by Nature in an admirable manner.

The west of Africa is bordered by a long bank of sand,

on which the waves of the Atlantic are incessantly breaking. Brasil, in the whole extent of its coast, opposes to the perpetual east winds, and the currents of the sea, a rampart of rocks more than one thousand leagues in length, twenty paces broad at the summit, and of a thickness unknown at the base. It is a musket-shot distant from the shore. The sea covers this rampart entirely when it is high; but on its subsiding, the reef exhibits the elevation of a peak. This dyke is composed of one solid mass, throughout its whole length, as has been ascertained by various soundings; and it would be impossible for a vessel to reach the shore of Brasil were it not for several inlets by which they enter and return.*

Go from south to north, and you will find similar precautions. The coast of Norway is provided with a bulwark nearly resembling that of Brasil.—Pontoppidan informs us, that this coast, which is almost three hundred leagues in length, is, in general, steep, angular, and pendant; so that the sea is, in some places, three hundred fathoms deep close in shore. This has not prevented Nature from farther protecting these shores by a multitude of islands, great and small. "By such a rampart, (says he) consisting of, perhaps, a million or more, of stone columns, founded in the deepest part of the sea, the capitals of which rise only a few fathoms above the surface, all Norway is defended on the west, both against enemies and against the ocean." It is behind this species of rampart, of a construction so wonderful, that the ports on this coast are situated. "But, (adds he) as vessels are sometimes in great danger of being dashed to pieces, before they can get into port, from the winds and currents, which are extremely violent in the passages between these rocks and islands, and from the difficulty of anchoring in such deep water, government has caused several hundreds of strong iron rings to be fastened in the rocks, about two fathoms above the water, by which vessels may be moored."

* See the History of the Troubles of Brasil, by Pierre Moreau.

Nature has infinitely varied these means of protection especially in the islands, which themselves defend a continent. She has, for example, surrounded the Isle of France with a bank of madrepores, open only at the places where the rivers discharge themselves into the sea. Other islands, like many of the Antilles, were defended by forests of mangroves, which grow in sea-water, and break the violence of the waves by yielding to their motion. It is, probably, to the destruction of these vegetable fortifications, that we ought to ascribe the irruptions of the sea, now so frequent in many islands, and, among others, in that of Formosa. Others are composed of solid rock, rising like huge moles, above the bosom of the waves; such as Maritimo, in the Mediterranean; others are volcanic, as the island of Fuego, near Cape de Verd; and many others, of a similar description, in the South Sea, which rise, like pyramids, with fiery summits, and serve for light-houses to mariners, by their flame in the night, and their smoke by day. The Maldives are protected against the ocean, with the most wonderful precaution. They are, indeed, more exposed than many others, being situated in the midst of the great current of the Indian Ocean, already mentioned, which passes and repasses them twice a year. They are, besides, so low, that they scarcely rise above the level of the water, and are so small, and so numerous, that they are computed at twelve thousand; and many of them are so near, that it is possible to leap from one to the other. Nature has first collected them into clusters, or archipelagos, separated from each other by deep channels, in a direction from east to west, which afford numerous passages to the general current of the Indian Ocean. These clusters are thirteen in number, and extend, in a row, from the eight degree of north to the fourth degree of south latitude, which gives them a length of three hundred of our leagues, reckoning twenty five to a degree. But let us permit the interesting and unfortunate Fracis Pyrard, who there passed the flower o.

his life in a state of slavery, to describe their architecture. He has left the best account we have of those islands, as if it were necessary that, in every case, things most worthy of the esteem of mankind, should be the fruit of some misfortune. "It is wonderful (says he) to see each of these clusters entirely surrounded with a great bulwark of stone; for it is not in the power of human art to secure so completely with walls a space of ground of that extent.* These clusters are all of a circular or oval figure, about thirty leagues in circumference, some being a little more, others not quite so much, and are all in a series, end to end, without any contact whatever. The channels between them are some broad, and others very narrow. When you are in the centre of a cluster, you see all around you that great bulwark of stone, which, as I have observed, encircles and defends the islands against the impetuosity of the sea. But it is frightful, even to the boldest to approach this bulwark, and to behold the billows advancing from a great distance, and dashing with fury all around; for then, I assure you, as a thing I have seen times without number, that the spray exceeds the size of a house, and is as white as cotton; so that you are surrounded with a wall completely white, especially when the sea is high." Pyrard also observes, that most of the islands, inclosed in these subdivisions, are surrounded, each in particular, by a bank, as a farther protection against the sea. But the current of the Indian Ocean, which passes through the parallel canals of these clusters, is so violent, that it would be impossible for the inhabitants to maintain a communication with each other, had not Providence made an admirable provision for that purpose. Each of these clusters is divided by two distinct channels, which intersect them diagonally, and whose extremities terminate at the ends of the great parallel channels that separate them; so that, if you wish to pass from one of these archipelagoes to the

* Voyage to the Maldives, chap. x.

other, when the current is easterly, you leave that, where you may happen to be, by the diagonal channel to the east, where the water is calm, and afterwards, committing yourself to the current which passes through the parallel channel, you will arrive, when you put off from the shore, at the opposite cluster, into which you enter by the opening of its diagonal channel, which is to the west. A contrary method is pursued, when the current changes six months afterwards. It is through these interior communications that the natives, at all seasons, make excursions through the whole chain of islands, from north to south, notwithstanding the violence of the currents by which they are separated.

Each isle has its fortification, proportioned, if I may be allowed the expression, to the danger to which it is exposed from the billows of the ocean. It is not necessary to figure to yourself the most violent of tempests, in order to form an idea of their fury. The mere action of the trade-winds, uniform as it is, suffices to give them, at length, the most violent impulsion. Each of these waves, adding to the constant velocity which it receives every moment from the wind, a velocity acquired by its individual motion, would form, after proceeding a considerable space, a prodigious mass of water, if its course were not retarded by currents which cross it, by calms which slacken, but, above all, by the banks, shoals, and islands, which break it. A very striking effect of this accelerated velocity of the waves is observed on the coasts of Chili and of Peru, which, however, experience only the mere repercussion of the waters of the South Sea. Their shores are inaccessible, throughout their whole extent, unless at the bottom of some bay, or under shelter of some island, situated near the coast.—None of the islands of this vast ocean, so tranquil as to have been denominated the Pacific, can be approached on the side which is exposed to the currents, occasioned only by the trade-winds, unless reefs or rocks break the impetuosity of its billows. In these cases, it is

a spectacle at once magnificent and tremendous, to behold the vast sheets of foam which incessantly rise from the bosom of their black concavities, and to hear their harsh roaring noise carried by the winds to the distance of several leagues, especially during the night.

Islands, then, are not fragments of continents. This, their situation in the sea, the manner in which they are protected against it, and the length of their duration, sufficiently demonstrate. In the time which the ocean has been battering them with its utmost fury, they must otherwise have been totally destroyed: yet Carybdis and Scylla still continue to emit their ancient roarings, so as to be heard at the extremities of Sicily. This is not the proper place, to state what means are employed by Nature to preserve and to repair islands, nor to adduce other proofs from vegetables, from animals, and from man, which attest that they have existed, such as we now see them, from the very origin of the globe. I shall content myself with giving an idea of their construction, in order to produce perfect conviction that they cannot be the work of chance. They contain, like continents themselves, mountains, peaks, lakes, rivers, proportioned to their size. To demonstrate this new truth, I shall be obliged to say something concerning the distribution of the land; but I shall not be long, and shall endeavour to introduce nothing but what is absolutely necessary to make myself understood.

It must first be remarked, that the chains of mountains in the two continents, are parallel to the seas which border upon them: so that, if you see the plan of one of these chains, with its different branches, you are enabled to determine the correspondent sea-shore; for, as I have already remarked, these mountains are always parallel to it. You may, in like manner, on seeing the sinuosities of a shore, determine those of the chains of the mountains that are in the interior of the country; for the gulphs of a sea always correspond to the vallies of the mountains of the lateral continent. These correspondencies are perceptible

in the two great chains of the old and of the new world. The long chain of the Taurus runs east and west, like the Indian Ocean, the different gulphs of which it incloses, by branches prolonged to the extremities of most of the capes. On the contrary, the chain of the Andes, in America, runs north and south like the Atlantic Ocean. Another thing worthy of remark, and I may venture to say of admiration, is, that these chains of mountains are opposed to the regular winds, which blow from those seas, and convey to them the emanations from the latter; and that their height is proportioned to the distance at which they are situated from those shores, so that, the farther these mountains are from the sea, the greater is their elevation into the atmosphere. For this reason it is, that the chain of the Andes is placed along the South Sea, where it receives the emanations of the Atlantic Ocean, wafted by the east wind over the vast continent of America. The broader that continent becomes, the greater is the elevation of this chain. Towards the isthmus of Panama, where the continent is narrow, and consequently the distance from the sea is small, its height is inconsiderable; but it suddenly rises, precisely in the same proportion as the continent of America widens. Its most lofty mountains look over the broadest expansion of America, and are situated in the latitude of Cape St. Augustine.

The position and elevation of this chain were alike necessary to the fertility of this vast portion of the new world. For if, instead of extending along the South Sea, it had been placed on the coast of Brasil, it would have intercepted all the vapors conveyed over the continent by the east wind; and if it were not elevated into the region of the atmosphere, to which no vapor can ascend, on account of the subtilty of the air and the intenseness of the cold, all the clouds brought by the east wind, would be carried beyond it into the South Sea. In either case, most of the ...rs of South America would be dried up

The same reasoning may be applied to the chain of the Taurus. It presents to the Northern and Indian Ocean, a double ridge, whence flow most of the rivers of the ancient continent, some to the north and others to the south. Its branches are disposed in the same manner; they do not run along the shores of the peninsulas of India, but cross them in the middle, in their full length; for the winds of those seas do not blow always from the same quarter, like the east wind in the Atlantic Ocean, but six months in one direction and six months in another. It was therefore, proper, that they should divide the country they had to water.

It still remains for me to add some observations on the configuration of these mountains, to confirm the use for which they were intended by Nature. They are crowned, at intervals, by high peaks resembling lofty pyramids. These peaks, as has been well observed, are of granite, at least most of them. I know not of what granite is composed, but this I know, that those peaks attract the vapors of the atmosphere, which they collect around them in such quantity, that they are frequently concealed from view. This I remarked numberless times with respect to the peak of Piterboth, in the Isle of France, where I have seen the clouds, impelled by the south-east wind, deviate considerably from their direction, and gather round it; so that they sometimes formed a very thick cap which rendered the summit invisible. I had the curiosity to examine the nature of the rock of which it is composed. Instead of being formed of grains, it is full of small holes, like the other rocks of the island; it melts in the fire, and when melted, you may perceive on its surface small particles of copper. It is undoubtedly impregnated with that metal, and it is, perhaps, to the copper, that we ought to ascribe the quality it possesses of attracting the clouds, for we know, by experience, that this metal, as well as iron, has the property of attracting lightning. I know not of what substance other peaks are composed; but it is remarkable,

that, on the summits and on the declivities of the Andes are situated the celebrated gold and silver mines of Chili and Peru; and that in general all mines of iron and copper are found at the sources of rivers, and in elevated places, where they often discover themselves by the fogs with which they are surrounded. Be it as it may, whether this attractive quality be common to granite and other species of rocks, or whether it may depend on some metal which is amalgamated with them, I consider all the peaks in the world as real electric needles.

But it was not sufficient that the clouds should be collected round the summits of the mountains; the rivers which have their sources in them would still have had only an intermitting course. When the rainy season had passed, the rivers must have ceased to flow. Nature, to remedy this inconvenience, has contrived, in the vicinity of their peaks, lakes, which are real reservoirs or cisterns of water, to furnish them with a constant and regular supply. Most of these lakes are of incredible depth: they likewise answer various other purposes, such as that of receiving the melted snows of the adjacent mountains, which would otherwise flow with too great rapidity. When they are once full, it is a considerable time before they are exhausted. They exist, either internally or externally, at the sources of all regular currents of water; but when they are external they are proportioned, either by their extent, or by their depth and their discharges, to the size of the river that is to issue from them, as well as the peaks which are in the vicinity. These correspondencies must have been known to antiquity; for, if I am not mistaken, I have seen very ancient medals, on which rivers were represented by figures leaning on an urn and reclining at the foot of a pyramid, which, perhaps, denoted at once their source and their discharge.

If we, then, apply these general dispositions of Nature to the particular conformation of islands, we shall see, that, like continents, they have mountains, with branches

parallel to their bays; that these mountains are of an elevation corresponding to their distance from the sea, and that they contain peaks, lakes and rivers proportioned to their extent. Their mountains are also disposed like those of continents, with respect to the winds that blow over the seas by which they are surrounded. Those situated in the Indian Ocean, as the Moluccas, have their mountains towards the centre, so that they receive the alternate influence of the two atmospheric monsoons. Those, on the contrary, which are under the regular influence of the east winds in the Atlantic Ocean, as the Antilles, have their mountains placed at the extremity of the island, that is, to leeward, precisely as the Andes with respect to South America. The part of the island which is to windward, is called in the Antilles, *cabesterre*, as if to say, *caput terræ* (the head of the land) and that to leeward *basse-terre* (low land) though in general, says Father du Tertre,* the latter is much higher and more mountainous than the other.

The island of Juan Fernandez, which is in the South Sea, but very far beyond the Tropics, being in 33 deg. 40 min. south latitude, has its nothern part formed of very high and very steep rocks, while the south side is flat and low, to receive the influences of the south wind, which blows there almost the whole year. For the description of it the reader is referred to Anson's Voyage round the World.

The islands which deviate from these dispositions, and are very few in number, have remote relations, still more wonderful and certainly well worthy of being studied. They likewise furnish, in their vegetable and animal productions, other proofs that they are continents in miniature, but this is not the place to introduce them. If they were, as some have asserted, the remains of a great continent swallowed up by the ocean, they would have preserved, at least, a portion of their vast and ancient

* Natural History of the Antilles, p. 12.

fabric. We should see, rising immediately from the bosom of the deep, lofty peaks like those of the Andes, from twelve to fifteen hundred fathoms in height, exclusive of the mountains which support them. In other places, we should see these peaks raised upon enormous mountains, proportioned to their magnitude, and inclosing within their circumference vast lakes, like that of Geneva, with rivers issuing from them, such as the Rhone, precipitating themselves at once into the sea, without watering any land. At the foot of their majestic declivities there would be no plains, no provinces, no kingdoms. These huge ruins of the continent, in the midst of the ocean, would resemble the enormous pyramids reared on the sands of Egypt, which appear to the eye of the traveller as so many unmeaning structures; or to those vast palaces demolished by the hand of time, where are seen turrets, columns, triumphal arches, but the habitable parts of which are entirely destroyed. The productions of the wisdom of Nature are not useless and transitory, like the works of men. Every island has its plains, its vallies, its hills, its hydraulic pyramids, and its Naiads proportioned to its magnitude.

Some islands, indeed, but in much smaller number, have mountains whose elevation appears disproportionate to their extent, Such is that of Teneriffe; its peak is so lofty as to be covered with ice during a great part of the year.* But that island contains mountains of inconsiderable elevation, which are proportioned to its bays: that

* Dr. Heberden, who visited this island in the year 1752, ascended to the summit of this mountain. He was provided with all the instruments necessary for ascertaining its height, made the nicest observations at three different times, and found its elevation above the level of the sea to be 2566 fathoms, or 15,396 English feet, which is only 148 yards less than three miles. The Chevalier de Borda, who measured its height in the year 1776, makes it only 1931 toises, or 12,340 English feet. Captain Cook, in his first voyage, describes the appearance of this mountain at sun-set as very striking, for when the sun was below the horizon, and the rest of the island appeared of a deep black, the mountain still reflected his rays and glowed with a warmth of color which no painting can express. T.

supporting the peak rises amid the others in the form of a dome, not unlike the dome of the *Invalides*,* towering above the circumjacent buildings. I observed it myself and made a drawing of it, on my way to the Isle of France. The inferior mountains belong to the island, and the peak to the continent of Africa. This peak, covered with ice, is situated directly opposite to the commencement of the great sandy desert called Zara, and, undoubtedly, contributes to refresh its shores and its atmosphere, by the effusion of its snows, which takes place in the midst of summer. Nature has likewise placed other glaciers at the entrance of this burning desert, such as Mount Atlas. Mount Ida, in Crete, with its collateral mountains, covered in all seasons with snow, according to the observation of Tournefort, is situated exactly opposite to the burning desert of Barca, which bounds Egypt from north to south. These remarks will lead to a few farther reflections on the chains of icy mountains, and the sandy zones scattered over the surface of the globe.

I beg pardon of the reader for these digressions, into which I have been drawn imperceptibly, but I shall make them as short as possible, though they lose great part of their clearness by being abridged.

The icy mountains appear to be principally intended to convey coolness to the shores of the seas situated between the tropics, and the zones of sand, on the contrary, to accelerate, by their heat, the fusion of the polar ices. We can indicate only in a summary manner, these wonderful harmonies; but a reference to the journals of navigators and to geographical maps is sufficient to evince, that the principal part of the African continent is so situated, that the wind of the north pole blows most constantly on its coasts, and that the shore of South America, projects beyond the Line, in such a manner as to be cooled by the

* The Hotel des Invalides at Paris, an asylum for disabled soldiers as Chelsea College with us. T.

wind of the south pole. The trade winds, which prevail in the Atlantic Ocean, always partake of the influence of the two poles; that which is on our side inclining strongly towards the north, and that beyond the Line depending greatly on the south pole. These two winds are not oriental, as has been generally imagined, but they blow nearly in the direction of the channel which separates America from Africa.

The warm winds of the torrid zone, blow, in their turn, most constantly towards the poles, and it is extremely remarkable, that, as Nature has placed icy mountains in its vicinity to cool its seas conjointly with the ices of the poles, as Taurus, Atlas, the peak of Teneriff, Mount Ida, and others; she has likewise placed there a long zone of sand, to increase the heat of the south wind on its way to warm the seas of the north. This zone begins beyond Mount Atlas and encircles the earth like a belt, extending from the westernmost point of Africa to the most easterly extremity of Asia, in a reduced distance of more than three thousand leagues. Some branches turn off and advance direct north. We have already remarked, that a region of sand is so hot even in our climates, from the multiplied reflections of its brilliant particles, that we never observe the snow to lie long upon it, even in the midst of the severest winters. Those who have crossed the sands of Etampes in summer, and in the middle of the day, know to what a degree the heat is there reverberated. In certain days in that season, it is so intense, that, about twenty years ago, four or five paviors, working on the great road of that town, between two banks of white sand, were suffocated by it. From these facts it may be concluded that, but for the ices of the pole and the mountains in the vicinity of the torrid zone, a great portion of Africa and Asia would be uninhabitable, and that, were it not for the sands of those continents, the ices of our pole would never melt.

Every icy mountain has, like the poles, its sandy zone,

which accelerates the fusion of its snows. This may be remarked in the description of all the mountains of tha kind, as the peak of Teneriff, Mount Ararat, the Cordilleras, and many others. These zones of sand not only surround their bases, but there are likewise others higher up the mountains, at the foot of their peaks, which are several hours' walk across. These sandy zones have still another use, that of contributing to repair the diminutions sustained by the mountains. Clouds of dust perpetually issue from them; these rise, in the first instance, on the shores of the sea, where the ocean forms the first deposits of its sands, which are there reduced into an impalpable powder, by the incessant dashing of the waves that break upon them; we afterwards find these clouds of dust in the vicinity of lofty mountains. The conveyances of these sands from the sea-shore to the interior of the continent take place in different seasons and in various manners. The most considerable happen at the equinoxes, for then the winds blow from the sea to the land. See what Cornelius le Bruyn says, concerning a sandy tempest by which he was overtaken on the shore of the Caspian Sea. These periodical conveyances of sand are connected with the general revolution of the seasons, but others that take place every day in the interior of countries, are very perceptible towards the elevated regions of continents. All travellers who have been at Pekin agree, that it is not possible to go abroad during a part of the year, in the streets of that city, without a veil to cover the face, on account of the sand with which the air is filled. When Isbrand Ides arrived on the frontiers of China, at the outlet of the adjacent mountains of Xaixigar, that is, at the most elevated part of the crest of the continent of Asia, from which the rivers begin their courses, some towards the north, and others towards the south, he observed a regular period for these emanations. "Every day," says he,* "regularly at noon, a violent wind blows for two hours,

* Travels from Moscow to China, Chap. XI.

and this, together with the heat of the sun by day, dries the ground to such a degree that a dust, almost insupportable, rises from it. About five miles above Xaixigar, I had perceived the heavens cloudy, over the whole range of the mountains, and when I was on the point of leaving them, the sky was perfectly serene. I even observed at the place where they terminated, an arch of clouds thrown from west to east, over to the mountains of Albase, and which seemed to form a separation of climate." Thus mountains have, at the same time, nebulous and fossil attractions. The first furnish water to the sources of the rivers that issue from them, and the second supply them with sand to keep up their territory and their minerals.

Another kind of harmony subsists between the icy and sandy zones of the new world. They run, like its seas, from north to south, whereas those of the old continent are directed, conformably to the length of the Indian Ocean, from west to east.

It is very remarkable that the influence of the icy mountains extends farther over the sea than over the land. We have seen that those of the two poles follow the direction of the channel of the Atlantic Ocean. The snows which cover the long chain of the Andes, in America, likewise serve to cool all the South Sea, by the action of the east wind which blows over them; but as part of that ocean and of its shores, which is sheltered from that wind by the very height of the Andes, would have been exposed to excessive heat, Nature has formed an elbow towards the west, at the most southern point of America, which is covered with icy mountains, so that the cool breezes, perpetually issuing from them, may sweep the coasts of Chili and Peru. This wind, called the south wind, prevails there all the year round, according to the testimony of every navigator. It does not, it is true, proceed from the south pole; if that were the case no vessel could ever double Cape Horn, but it issues from the extremity of Magellan's Land, which evidently projects beyond the

shores of the South Sea. The ices of the poles then renovate the waters of the sea, as the ices of the mountains renew those of the great rivers. These effusions of polar ices rush towards the Line from the action of the sun, which is incessantly pumping up the waters of the sea in the torrid zone, and which, by this diminution of bulk, causes the waters of the poles to press towards that part. This, as we have already observed, is the primary cause of the motion of the South Seas. It appears highly probable that the polar effusions are proportionate to the evaporations of the ocean. But, without quitting the subject on which we are engaged, we shall examine why Nature has taken still greater care to cool the seas than the lands of the torrid zone; for, it is worthy of remark, that, not only the polar winds which blow there, but most of the rivers that discharge themselves into them, have their sources in icy mountains, such as the Zara, the Amazons, the Oronoko, and others.

The sea was destined to receive, by means of the rivers all the spoils of the vegetable and animal productions of the earth; and, as its course is determined towards the Line, by the diurnal diminution of its waters, which the sun is continually evaporating, its shores, under the torrid zone, would have been exposed to putrefaction, had not Nature employed various methods to keep them cool. It is for this reason, say some philosophers, that its waters are salt. But this is likewise the case in the north, and even to a still greater degree, according to the modern experiments of the interesting M. de Pagés. It is the saltest and the heaviest in the world, says Captain Wood, an English navigator, who wrote in 1676. Besides, the saltness of the sea has not the effect of preserving its waters from corruption, as is generally imagined. All who have been at sea, know, that if a bottle or cask be filled in hot climates with sea-water, it soon becomes putrid. Sea-water is not a pickle, but a real lixivium, or ley, which very speedily dissolves dead bodies. Though salt, it takes

out salt sooner than fresh water, as is known to the sailors from daily experience, for they use no other to freshen their salt provisions. It blanches on the shore, all the bones of animals, as well as the madrepores, which, when alive, are brown, red, and of every colour; but when rooted up and thrown into the sea-water on the coast, they, in a very short time, become as white as snow. Nay more; if you catch at sea a crab or a sea-urchin, and have them dried to preserve them, without being previously washed in fresh water, all the claws of the crab and all the prickles of the urchin will drop off. The membranes by which their limbs are attached, dissolve, in proportion as the sea-water, with which they are moistened, evaporates. I have myself made this experiment to my cost. Sea-water is impregnated not only with salt, but likewise with bitumen, and some other substance with which we are not acquainted; but the salt is in such a proportion as to assist the dissolution of cadaverous bodies floating in it, as that which we mix with our food promotes digestion. If Nature had made it a pickle, the ocean would be covered with all the impurities of the earth, which would there be kept in perpetual preservation.

These observations will indicate to us the use of volcanoes. They do not proceed from fires in the interior of the earth, but they derive their origin and the materials which supply them from the waters. To be convinced of this, it is only necessary to remark, that there is not a single volcano in the interior of continents, unless it be in the vicinity of some great lake, as that of Mexico. They are situated in general in islands, at the extremity, or at the confluence of the currents of the sea, and in the counter-tide of their waters. This is the reason why they are so numerous near the Line, and along the shore of the South Sea, to which the south wind, that perpetually blows there, brings all the substances floating in it, in a state of dissolution. Another proof that they owe their support to the sea, is, that in their eruptions, they frequently vomit

torrents of salt water. Newton ascribed their origin and duration to caverns of sulphur in the bowels of the earth. But that great man had not reflected on the position of volcanoes in the vicinity of waters, nor calculated the prodigious quantity of sulphur, which the magnitude and the duration of their fires must have required. Vesuvius alone, which has been burning night and day, from time immemorial, would have consumed a mass of it larger than the whole kingdom of Naples.* Besides, Nature has done nothing in vain. What purpose could be answered by such magazines of sulphur in the interior of the earth? They would be found entire in places where they are not consumed by fire. Mines of sulphur are found no where but in the vicinity of volcanoes. What, besides, could renovate them when they are exhausted? The supplies with which volcanoes are so constantly provided, exist,

* That illustrious naturalist, M. Buffon, supposed the causes which produce volcanoes to be situated at no great distance below the basis of the mountains, which exhibit phenomena so tremendous. "We cannot suppose," says he, "that these substances are ejected from any great distance below, if we only consider the great force required to throw them up to such vast heights above the mouth of the mountain; if we examine the substances thrown up, which we shall find to be the same with those of the mountain below; if we take into consideration that air is always necessary to keep up the flame; but, above all, if we attend to one circumstance, which is, that if these substances were exploded from a vast depth below, the same force required to shoot them up so high would act against the sides of the volcano and tear the whole mountain in pieces." But Buffon had not reflected, any more than Newton, on the vast quantity of matter discharged from these burning abysses. That from Ætna alone is supposed to exceed twenty times the bulk of the mountain, though the circumference of its base measures 180 miles. Indeed, the greatest part of Sicily seems to be covered with its eruptions. The inhabitants of Catanea have found, at the distance of several miles, streets and houses sixty feet deep, overwhelmed by the lava or matter it has discharged; and what is still more remarkable, the walls of those very houses have been built of materials evidently thrown up by the mountain. These facts must lead to this inference; that the matter exploded cannot belong to the mountain itself, otherwise it would have been quickly consumed; it cannot be derived from moderate depth, since its amazing quantity evinces that all the places near its bottom must have been long since exhausted, nor can it have an extensive, and, if it may be so denominated, a superficial spread, as in that case, the circumjacent country would be quickly undermined. It must therefore be supplied from the deeper regions of the earth. T.

not in the earth, but in the sea. They are furnished by the oils, the bitumens and the nitres of vegetables and of animals, conveyed by the rains and the rivers from all quarters, into the ocean, where the dissolution of all bodies is completed by its lixivial water. To these are added metallic solutions, and especially those of iron, which, as is well known, abounds all over the earth. It is with all these substances that volcanoes are kindled and maintained. Lemery, the chemist, imitated their effects, by a mixture of iron filings, sulphur and nitre, moistened with water, which took fire of itself. If Nature had not kindled those vast furnaces on the shores of the ocean, its waters would be covered with vegetable and animal oils, which would never evaporate, for they resist the action of the air. They are frequently observed, floating on the surface of some tranquil basin, from their colour, resembling that of a pigeon's neck. Nature purifies the waters by the fires of volcanoes, as she purifies the air by means of lightning: and as storms are more common in hot countries, she has there, for the same reason, multiplied volcanoes. She burns on the shores the impurities of the sea, as a gardener, at the end of autumn, burns the refuse of his garden. We find, indeed, lavas in the interior of countries; but a proof that they owe their origin to the waters is, that the volcanoes which produced them became extinct when the waters failed. These volcanoes were kindled, like those that still exist, by the vegetable and animal fermentations with which the earth was covered after the deluge, when the spoils of so many forests and of so many animals, whose trunks and bones are still found in our quarries, floated on the surface of the ocean, and formed prodigious deposits, which the currents accumulated in the basins of the mountains. It cannot be doubted that they took fire there, by the mere effect of fermentation, as we see stacks of damp hay catch fire in our meadows. It is impossible to call in question these ancient conflagrations, the traditions of which were preserved in antiquity, and which imme-

diately follow those of the deluge. In the mythology of the ancients, the history of the serpent Python, produced by the corruption of the waters, and that of Phaëton, who set the world on fire, immediately follow the history of Deucalion and Pyrrha, who escaped from the waters of the deluge, and are allegories of the pestilence and of the volcanoes, which were the first results of the general dissolution of animals and vegetables.

All that now remains is to refute the opinion of those who maintain that the earth issued from the sun. The principal arguments by which they support it, are its volcanoes, its granites, the vitrified stones scattered over its surface, and its progressive refrigeration from year to year. I respect the celebrated writer who advanced this opinion, but I venture to assert that the grandeur of the images presented by this idea seduced his imagination.

We have said enough concerning volcanoes to prove that they do not proceed from the interior of the earth. With respect to granites, they exhibit in the aggregation of their grains, not a vestige of the action of fire. I am ignorant of their origin: but certainly there is no foundation for referring it to that element, because it cannot be ascribed to the action of water, and because no shell-fish are found blended with them. As this assertion is destitute of proof, it requires no refutation. I shall, however, observe, that granites do not appear to be the production of fire, on comparing them with the lavas of volcanoes; the difference of their substances supposes different causes in their formation.

Agates, flints, and all the species of silex seem to have analogies with vitrifications, from their semitransparency, and from being generally found in beds of marl, which resemble banks of slaked lime; but these substances are not the productions of fire, for lavas never present any thing of that kind. I have picked up on the flinty hills of Lower Normandy, oyster-shells perfectly entire, amalgamated with black flints. Had these flints been vitrified

by fire, they would have calcined, or at least altered the oyster-shells adhering to them, but they were as sound as if just taken out of the water. The beach along the district of Caux is formed of alternate strata of marl and flints of the same species; as they are cut in a shelving direction you would imagine it to be some great wall, the layers of which had been regulated by an architect: and with so much the greater appearance of probability, as the natives of the country build their houses of the same materials and disposed in the same order. These beds of marl are from one to two feet broad, and the ranges of flints which separate them are three or four inches thick. I have counted seventy or eighty of these horizontal strata, from the level of the sea, up to that of the land. The thickest are at the bottom and the smallest at the top, which causes the shore to appear higher than it is; as if Nature chose to employ a certain degree of perspective to encrease its elevation; but she was undoubtedly induced to adopt this arrangement by reasons of solidity which are perceptible in all her works. Now these beds of marl and flints are full of shells which have undergone no alteration from fire, and would be in perfect preservation, had not the weight of this enormous mass broken the largest of them. I have seen fragments extracted, of that which is called the *Thuilée*, which is found alive only in the Indian Seas, and the pieces of which, being put together, formed a shell much larger than those used for holding the holy water in the church of St. Sulpice at Paris. I have likewise remarked there a bed of flints, completely amalgamated, and forming a single sheet, the section of which is about one inch thick and thirty feet in length. Its depth in the cliff I know not; but, with a little art, it might be detached and converted into the most superb agate table in the world. Wherever these marls and flints are found, there shells are met with in great numbers, so that, as the marl has evidently been formed of their wreck, it appears to me extremely probable, that the flints

were composed of the very substance of the fishes they contained. This opinion will appear less extraordinary, if we observe that many of the *cornu ammonis* and fossil univalves, which, from their form, have resisted the pressure of the earth, and not been crushed by it, have not emitted, like the bivalves, the animal matter they enclosed, but exhibit it within them in the form of crystals, with which they are commonly filled, whereas the bivalves are totally destitute of it. The animal substances of these last, I presume, confounded with their fragments, have formed the different colored pastes of marble, and imparted to them that hardness and polish of which those marbles are susceptible. This substance appears, even in the live shell-fish, with the characters of agate, as may be seen in several kinds of mother-of-pearl, and among others in the semi-transparent and very hard knob, which terminates that called the harp. Finally, this stony substance is found, likewise, in some land animals; for I have seen, in Silesia, the eggs of a species of woodcock, which are there held in high estimation, not only because they are very delicate eating, but because the white, when dried becomes as hard as flint, and is susceptible of such an exquisite polish as to be cut and set in rings.

I might enlarge on the geometrical impossibility, that our globe could ever have been detached from that of the sun, by the collision of a comet, because, conformably to the hypothesis of this impulsion, it must have been either hurried along into the sphere of the comet's attraction, or carried back into that of the sun. It has, in truth, remained in the sphere of that luminary, but it is not easy to conceive why it should never have approached nearer, and why it keeps at the distance of nearly thirty millions of leagues, though no comet prevents it from returning to the place from which it set out. The sun, it is said, has a centrifugal force. The globe of the earth must, consequently, retire from it. No, it is rejoined, because the earth has a constant tendency towards that luminary. It

must, then, have lost the centrifugal force, which ought to be inherent in its nature as being a portion of the sun. I might farther enlarge on the physical impossibility, that the earth should contain, within its bosom, so many heterogeneous substances, if it were a portion of a body so homogeneous as the sun, and demonstrate that they can, by no means, be considered as the wreck of solar and vitrifiable substances, (if it be possible for us to have any idea of the substances from which light issues) since some of our terrestrial elements, such as water and fire, are absolutely incompatible. But I shall confine myself to the refrigeration ascribed to the earth, because the evidence in support of that opinion is on a level with the comprehension of all men, and is of importance to their security. If the earth becomes colder, the sun, of which it is supposed to be a part, grows cold in the same proportion, and the mutual diminution of heat in these two globes, must have manifested itself from age to age, at least on the surface of the earth, in the evaporations of the seas, in the decrease of the rain, and especially in the successive destruction of a great number of plants, which at the present day, are killed by the depression of a few degrees of heat, when removed into a different climate. Not a single plant, however, has been lost of those which were known to Circe, the most ancient of botanists, whose herbal has, in some measure, been preserved by Homer. The plants, celebrated by Orpheus, and their virtues exist at this day. There is not even a single one, which has lost any thing of its ancient attitude. The jealous Clytia still turns towards the sun; and the beautiful son of Liriope, Narcissus, still admires himself on the brink of the fountain.

Such are the testimonies borne by the vegetable kingdom to the constancy of the temperature of the globe; let us now examine those furnished by mankind. There are inhabitants of Switzerland, say they, who have perceived a progressive increase of the ices in their mountains. I might oppose to them other modern observers, who, to

ingratiate themselves with the princes of the north, pretend, with as little foundation, that the cold has diminished there, because those princes have caused the forests to be cut down; but I shall confine myself to the testimonies of the ancients, who could have no intention of flattering any one, on a subject of this nature. If the refrigeration of the earth is perceptible in the life of one man, it must have been much more so in the life of mankind. Now all the temperatures described by the most ancient historians, as that of Germany by Tacitus, of Gaul by Cæsar, of Greece by Plutarch, of Thrace by Xenophon, are precisely the same at this day as at the time of those writers.* The book of Job, the Arabian, which is supposed to be more ancient than the writings of Moses, and contains views of Nature much more profound than is generally imagined, views, of which the most common were utterly unknown to us two centuries ago, makes frequent mention of the fall of snow in his country, situated in about the thirteenth degree of north latitude. Mount Lebanon has borne from the most remote antiquity the Arabic name of *Liban*, which signifies *white*, on account of the snows with which its

* This assertion of our author is in some measure contradicted by the observations of other writers, but in a way, which, so far from weakening his arguments, tends, on the contrary, to confirm and to strengthen them. Indeed, it can scarcely be questioned that Europe was much colder in ancient times than at present, as the accounts transmitted to us by the writers of antiquity establish the fact. We are informed by Cæsar, that in his time, the rein-deer, the elk and the wild bull were inhabitants of the Hercynian forest, which then overspread a great portion of Germany and Poland. At present those animals, particularly the two first, are found only amid the snows of Lapland and Siberia, or on the rocks of Spitzbergen. The beneficial alterations which have been made during the last fifteen hundred years, in the appearance of this division of the globe, are assigned as the causes of the diminution of the cold. The immense forests which intercepted from the earth the rays of the sun, have, in later times, been gradually cleared, the morasses have been drained, and in proportion as the soil has been cultivated the air has become more temperate. Canada is said to represent, at this day, what Germany was in remote antiquity; for though lying in the same parallel of latitude with the finest provinces of France and England, it is visited with the most rigorous cold: the rein-deer are very numerous; the ground is covered with deep and indissoluble snow, and the expanded bosom of the St. Laurence is annually frozen over, while the Thames is seldom obstructed in its navigation by ice. T.

summit is continually covered. Homer relates that it snowed at Ithaca when Ulysses arrived there, so that he was obliged to borrow a cloak of the good Eumæus. If, during the space of three thousand years and more, the cold had annually increased in all those climates, their winters must now have been as long and as severe as those of Greenland. But Lebanon, and the elevated provinces of Asia, have preserved the same temperature. The little isle of Ithaca is still covered in winter with hoar frost; and it produces, as in the time of Telemachus, the laurel and the olive.

EXPLANATION OF THE PLATE OF THE ATLANTIC HEMISPHERE.

This plate represents the Atlantic Hemisphere with its sources, its ices, its channels, its currents, and its tides, in the months of January and February

Though I shall here be obliged to repeat some observations, which have already been introduced, I shall subjoin to them others, worthy, I am bold to assert, of the reader' most serious attention.

Observe, in the first place, that the earth is not here represented after the manner of geographers, who exhibit it in their maps of the world as a concavity, for the purpose of causing the retreating parts to be seen on a large scale. Their projection gives a false idea of the earth, by shewing the retiring parts of its circumference as the widest, and the prominent parts in the middle as the narrowest. They present not a convex, but a concave globe This figure represents it such as it would be seen from the heavens, on the side of the Atlantic Ocean, and in our winter.

You may distinguish in it the sources of the Atlantic Ocean, which issue in summer from the north pole; it,

channel, formed by the projecting and retreating parts of the two continents, and its mouth comprehended between Cape Horn and the Cape of Good Hope, by which this ocean discharges itself during the summer into the Indian Ocean.

The opposite side of this hemisphere, though yet but little known, would present, like this, a fluviatic channel, with all the same accessories; sources, ices, currents, and tides, formed not by continents, but by projections of islands and reefs, which direct, during our winter, the course of the effusions of the south pole into the Indian Ocean. However interesting these new projections of the globe might be, it was impossible for me to make the necessary expenditure for engraving them; for it would have been desirable to present either hemisphere in its summer and its winter, for the purpose of exhibiting their various currents in each season, and to give birds'-eye views of the poles, both in winter and in summer, in order to convey an idea of the extent of the domes of ice which cover them, and the currents which issue from them, in the different seasons of the year. These different sections would have required at least eight plates on a larger scale than that before us, to unfold, with perspicuity, this single portion of my Studies of Nature. Besides, this increase of charts would have required more copious details relative to the distribution of the globe, of which I meant to treat in this work only by the way.

The mere survey of the Atlantic hemisphere in the months of January and February, will be sufficient to render intelligible what we have said concerning the polar ices and their periodical effusions. We shall treat successively of the sources of the Atlantic, of its ices, its channel, its currents, its tides, and even of its discharge.

The sources of the Atlantic Ocean are, in summer, at the north pole. They are situated in the Baltic Sea, in Baffin's and Hudson's Bays, in Waigats' Streights, &c. It may be remarked on a globe, that the sesources, which

give existence to the Atlantic Ocean, turn round the pole in a spiral direction, similar to the windings of a river round the mountain from which it descends; so that they collect, in this part, all the discharges of the rivers of the north, and carry their waters into the Atlantic Ocean. Hence I presume that there is, in proportion, much less polar effusion in that part of the South Sea which is opposite to it We shall farther see that Nature has subjected to the Atlantic channel the extremities of the two general currents of the poles, which there terminate, after having made the circuit of the globe; and it is in opposition to the sources from which these currents issue, that I give to the extremities of their courses the name of mouth. But let us now consider only their sources. It is easy to conceive that the waters of these sources must flow towards the Line, to replace those which the sun is there daily evaporating; but they have, besides, an elevation which facilitates their course. Not only the ices from which they proceed are considerably elevated above the hemisphere, but the poles themselves have a great elevation of soil. I ground this assertion in the first place, on the observations of Tycho Brahe and Kepler, who saw the shadow of the earth oval at the poles, in the central eclipses of the moon, and on the authority of Cassini who assigns fifty leagues more to the axis of the earth than to its diameter. In the second place, I have on my side, authentic experiments, collected by the Academy of Sciences, but of which no farther notice has been taken, since the opinion that the earth is flattened at the poles, became prevalent. It is well known, for example, that in proportion as you ascend a mountain, the mercury in the barometer falls; now the mercury falls in the barometer in proportion as you advance northward. It falls in our climates about one line at an elevation of eleven fathoms. According to the History of the Academy of Sciences, for the year 1712, the weight of one line of Mercury at Paris is equivalent to ten fathoms five feet, whereas, in Sweden, an elevation

of only ten fathoms one foot six inches and four lines produces the same depression. The atmosphere of Sweden, therefore, is lower than that of Paris, and consequently the ground of Sweden is higher. To these observations may be added those made by navigators of the north, who have seen the sun the more elevated above the horizon, the nearer they approached to the pole. These optical effects cannot be ascribed merely to the laws of the refraction of the atmosphere. According to the academecian Bouguer,* "refraction elevates the stars in appearance, and we know from an infinite number of certain observations, that, when they appear to us to be on the horizon, they are actually 33 or 34 minutes below it. In regions where the atmosphere is more dense, the refractions must be somewhat stronger, and they are likewise, all circumstances being equal, somewhat greater in winter than in summer. In the practice of navigation, no regard need to be paid to that difference, but reference may be had to the small table on the margin." Accordingly, in that part of his work, he has introduced a small table, in which he states the greatest refraction of the sun at the horizon at 34 minutes for all the climates of the globe. But how did it happen that Barentz saw the sun above the horizon of Nova Zembla, on the 24th of January, in the sign of Aquarius, at five degrees twenty-five minutes, whereas he ought to have been in sixteen degrees twenty-seven minutes, to be visible in the seventy-sixth degree of north latitude, where Barentz then was? The refraction of the sun above the horizon was, therefore, nearly two degrees and a half, that is four times as great as Bouguer supposes, since he assigns it thirty-four minutes, or thereabout, for every climate. Barentz, it is true, was very much astonished to see the sun a fortnight sooner than he expected and he could not have persuaded himself that it was the 24th of January, unless he had observed that same morn-

* Treatise on Navigation, Book IV. chap. iii. sect. 3.

ing the conjunction of the moon and Jupiter, announced for Venice at one hour after midnight, in the Ephimerides of Joseph Scala, and which took plade at Nova Zembla at the hour of six in the morning in the sign of Taurus, which gave him at once the longitude of his hut in Nova Zembla, and the certainty that it was the 24th of January. A refraction of two degrees and a half is certainly very considerable. We may, in my opinion, ascribe one half to the apparent elevation of the sun in the very refractive atmosphere of Nova Zembla, and the other to the real elevation of the observer above the horizon of the pole. Barentz, accordingly, observed, from Nova Zembla, the sun at the equator, as a man sees him earlier from the summit of a mountain than from its base. It is, besides, a principle without exception in the harmonious laws of the universe, that Nature never proposes to herself any end, without obliging all the elements to concur in producing it. Nature, therefore, being desirous of compensating the poles for the absence of the sun, makes the moon pass towards the pole which the sun abandons: she crystallizes and reduces into brilliant snows the waters that cover it; she renders its atmosphere more refractive, that the presence of the sun may be taken from it the later, and restored to it the sooner. Hence, there is reason to conclude, that she has even elongated the poles of the earth, for the purpose of bestowing on them a longer participation of the influence of the luminary of day.

Some celebrated academicians have, indeed, laid it down as a fundamental principle, that the earth is flattened at the poles. Hear what is said on this subject by the same academician quoted above, who was employed with them to measure, near the equator, a degree of the meridian, which they found to be 56,748 fathoms. "But," says he, "what is well worthy of attention, the degrees of the earth have not been found of the same length in the other regions, where similar observations were made, and the difference is too great to be ascribed to the errors insepa-

rable from observations. The degree under the polar circle was found to be 57,422 fathoms. The necessary consequence must therefore, be, that the earth is not perfectly round, and that it must be higher at the equator than towards the poles, conformably to what we indicate relative to other experiments, not necessary to be detailed here. The curvature of the earth is more sudden towards the equator, in the direction of north and south, since the degrees there are smaller, and the earth on the contrary is flatter towards the poles, because there the degrees are greater.

I deduce, I must confess, a conclusion diametrically opposite from the observations of these academicians. I conclude that the earth is elongated at the poles, precisely because the degrees of the meridian are greater there than under the equator. Here follows my demonstration. If you place a degree of the meridian at the polar circle, upon a degree of the meridain at the equator, the former being 57,422 fathoms, would exceed the second of 56,748 fathoms, by 674 fathoms, according to the operations of the academicians. Consequently, if the whole arch of the meridian, which crowns the polar circle, and contains 47 degrees, were to be applied to an arch of 47 degrees near the equator, it would there produce a considerable protuberance, because its degrees are greater. This polar arch of the meridian could not extend longitudinally over an equinoctial arch of the same meridian, since it has the same number of degrees and consequently a chord of the same extent. If it extended in length, exceeding the other 674 fathoms in a degree, it is evident, that, at the extremity of its 47 degrees, it would get out of the circumference of the earth, that it would no longer appertain to the circle on which it is traced, and that, on applying it to one of the poles, it would form a species of flattened mushroom, with a protuberance all round the globe. To render the thing still more apparent, let us still suppose the profile of the earth at the poles to be the arch of a circle of 47 de-

grees. Is it not true, that if you trace a curve in the inside of that arch, as the academicians do, who flatten the earth at the poles, it will be smaller than the arch which is described within it; and that the more this curve is flattened, the smaller it becomes, because it will approach more and more to the chord of the arch, that is, to a straight line? Consequently the 47 degrees, or divisions of this interior curve, will be, each in particular, as they are together, smaller than the 47 degrees of the arch of the circle surrounding them. But, as the degrees of the polar curve are, on the contrary, greater than those of an arch of a circle, it must follow, that the whole curve is likewise of greater extent than when we suppose it to be more protuberant and circumscribed all round that arch: consequently the polar curve must form an elongated ellipsis.

I shall conclude this demonstration with an image more trivial indeed, but equally striking. If you divide the two circumferences of an egg, in length and breadth, each into 360 degrees, would you conclude that this egg is flattened at the extremities, because the degrees of its circumference in length were greater than the degrees of its circumference in breadth? It is not a little remarkable, that the academicans employ nearly the same figure to deduce a contrary result? They represent the globe of the earth like a Dutch cheese. They suppose that this globe is considerably elevated at the equator. "The curve of the earth," says Bouguer, "is more sudden towards the equator in the direction from north to south, because the degrees there are the smallest; and the earth, on the contrary, is flatter towards the poles because the degrees there are greater. One would imagine that the equator was distinguished only by the greater rapidity of motion performed in twenty-four hours; but it is marked in a manner much more real, by a continued elevation which must amount to about six marine leagues and a half in the whole circumference of the earth and must be every where at an equal distance from the two poles."

We have seen the strange consequence resulting at once from the flattening of the earth at the poles, and from the magnitude of the degrees of the meridian in that part, which necessarily gives the polar circle a projection beyond its circumference. Those which may be deduced from the more sudden elevation and curvature of the equator would not be less extraordinary. They are these:—If both the one and the other existed, there would be no seas under the equator, because they would then be determined by the elevation of six leagues and a half and by the more sudden curve of this part of the earth, to withdraw from it, and by the power of gravity to flow towards the flattened poles nearer to the centre, and there to restore the spherical segment which the academicians cut off. Accordingly, on this hypothesis, the seas would cover the poles, and would be of prodigious depth, whereas there would be nothing but very elevated continents under the Line. Now geography demonstrates the contrary; for it is near the Line that we find the deepest seas and many lands barely on a level with them, whereas elevated lands and shoal water are very frequent, especially towards the north pole.

Let us now proceed to consider the polar ices. Though they are here delineated precisely on the retreating and least visible parts of the globe, it is easy to form a judgment of their very considerable extent from the arch of the meridian which embraces them. At the south pole, where they are smaller in quantity, having recently undergone all the heat of the summer of that hemisphere, they extend from that pole to at least the 70th degree. They consequently form a cupola of an arch of more than 40 degrees, each containing at least 25 leagues (since the degrees in that part are greater than towards the equator, according to the experiments of the academicians) with a superfices of more than twenty thousand leagues, or a circumference of more than three thousand. It is impossible to call in question these dimensions, being taken from the experi-

ments of Captain Cook, who made the tour of this cupola in the middle of summer. The ices of the north pole are much more extensive, being represented in their winter. On both the one and the other is expressed an elevation of about twenty-five leagues at the poles. I shall not repeat in this place what I have said concerning the height of the masses found floating at the extremities of these cupolas, and which have an elevation of between twelve and fifteen hundred feet. I wished to have represented around these ices a kind of irradiation, or *aurora borealis*, which would have shewn their circular extent, and would have added to the picturesque effect of the globe, by rendering its poles luminous; for the south pole likewise has its nocturnal corruscations, as Cook observed, and it appears that these meteors owe their origin to the ice. But M. Moreau, the younger, who made the drawings for the plates of this work, convinced me that there was not sufficient room in the chart. These polar ices have, besides, been rendered sufficiently luminous to make them distinguishable, without concealing the outlines of the islands and continents which they cover.

As to the Atlantic channel, you may easily distinguish in it the prominent and the retreating parts of the two continents in correspondence with each other. If to this you add the sinuosity of its source to the north, which seems to wind in a spiral direction round our pole, and its wide divergent mouth, formed by Cape Horn on one side and the Cape of Good Hope on the other, by which it discharges itself for six months into the Indian Ocean, as we shall presently see, you will discover in it all the proportions of a fluviatic channel. As to its declivity from the place where it takes its departure from the pole, to that where it discharges itself into the south sea at the Cape of Good Hope, I believe it to be, as I have already mentioned, nearly the same as that of the course of the Amazons.

Let us now consider the course of the polar effusions,

produced by the action of the sun on the ices of the poles. Every year a general current issues from that which is heated by the sun; and as the sun visits them alternately, it follows, that there must be two opposite general currents which communicate to the seas their circulating motion, and which are known in the Indies by the name of the eastern and western monsoons, or winter and summer.

This being laid down, let us examine the effusions of the south pole, which is here represented in its summer. The general current issuing from it, is divided into two branches, one of which enters the Atlantic Ocean, forcing its way to the northern extremity of the same. When this branch arrives at the channel between the projecting parts of Africa and America, being straitened on passing from a wider to a narrower space, it forms on their coasts two counter-currents, which proceed in contrary directions. One of these counter-currents runs to the east along the coasts of Guinea, as far as the fourth degree south, according to the testimony of Dampier. The other, taking its departure from Cape St. Augustin, proceeds to the south-west, along the coast of Brasil, as high as Streight Le Maire inclusively. This effect is the consequence of a law of hydraulics, the operation of which is general. It is this; that whenever a current passes from a wide channel into a narrower, it forms on the coast two counter-currents. The truth of this may be ascertained by observing the current of streams, at the passage of the waters of a river beneath arches, near the end of a bridge, and in other situations. Accordingly, the current sets to the east along the coast of Guinea, and to the south-west along that of Brasil, during the summer of the south pole. But, in the middle of the Atlantic Ocean, and beyond the streight of the two continents, it runs northward throughout its whole course, and advances to the northern extremities of Europe and of America, bringing us twice a day, along our coasts, the tides of the south, which are the semi-diurnal effusions of the two sides of the south pole.

The other branch, issuing from the south pole, takes a direction to the west of Cape Horn, enters the South Sea, produces in the Indian Ocean the eastern monsoon, which takes place, in India, during our winter; and having made the circuit of the globe by the west, it unites in the east, at the Cape of Good Hope, with the general current that enters the Atlantic Ocean. You may trace, in part, on the map, this general current of the south pole, with its two principal branches, its counter-currents and its tides, by the arrows, indicating its direct, oblique and retrograde movements.

Six months afterwards, that is, in our summer, about the end of March, when the sun, at the Line, leaves the south pole and proceeds to warm the north, the effusions of the south pole cease; those of our pole begin to flow, and the currents of the ocean change in every latitude. The general current of the seas then issues from our pole, and divides like that of the south, into two branches. The first of its branches derives its sources from Waigats' Streight, Hudson's Bay, and others, which then flow in certain channels with the impetuosity of a sluice, and produce, in the north, tides which come from the north, from the east and from the west, to the great surprise of Linschoten, Ellis and other navigators, accustomed to see them set in from the south on the coasts of Europe. This current, formed by the fusion of most of the ices in the north of America, of Europe, and of Asia, which are at that time six thousand leagues in circumference, descends through the Atlantic Ocean, crosses the Line, and being confined by the same streight of Guinea and Brasil, it forms on their coasts two lateral counter-currents, which return towards the north, as those formed six months before by the current of the south pole, re-ascend towards the south. These counter-currents produce, on the coasts of Europe, the tides, which always seem to set directly from the south; though, at that season, they actually proceed from the north.

The branch which produces them afterwards advances to the south, doubles the Cape of Good Hope, takes its course eastward, forms the western monsoon of the Indian seas, and having encompassed the globe, as far as the South Sea, it passes Cape Horn, runs along the coast of Brasil, and produces a current which terminates at Cape St. Augustin, and is opposed by the principal current descending from the north.

The other branch of the current, which descends in summer from our pole, on the other side of our hemisphere, runs through the passage called the North Streight, situated between the easternmost extremity of Asia, and the westernmost point of the American continent. It descends into the South Sea, where it is re-united to the first branch, which there forms as we have said, the western monsoon of that ocean. This branch, issuing by the North Streight, receives a much smaller quantity of the icy effusions than that of the Atlantic Ocean, because the deep bays which are at the sources of that ocean, and the contours of these same sources which surround the pole in a spiral direction, receive as we have seen, the greatest part of the icy effusions of the north pole, and discharge them into the Atlantic Ocean.

The ocean, therefore, encircles the globe twice a year in opposite, spiral directions, issuing alternately from either pole, and describing on the earth, if I may be allowed the expression, the same course as the sun in the heavens.

This theory, I may venture to affirm, is so luminous, that, by means of it we may explain a multitude of difficulties, which involve in much obscurity the journals of navigators. Froger, for example, says, that, in Brasil the currents proceed in the same direction as the sun; that is, they run northward when he is in the northern signs, and southward when he is in the southern signs. This variable effect cannot possibly be explained by the pressure or the attraction of the sun or of the moon between the tropics, since these luminaries never pass those bounds,

and always proceed in the same direction, from east to west. But this is the solution:—When the current of Brasil runs to the south during our winter, it is the counter-current of the general current of the south pole that then sets to the north; and when this Brasilian current proceeds northward during our summer, it is the extremity of this same general current that returns by Cape Horn. The same thing does not take place with respect to that of the Gulph of Guinea, which is opposite, and always runs eastward, though it is precisely in the same predicament; for, in our winter, this current of the Gulph of Guinea, is at the extremity of the general current of the south pole, which returns by the Cape of Good Hope, and which sets to the north during that season, along the coast of Africa, from the thirty-first to the fourth degree of south latitude, according to the testimony of Dampier. But this extremity of the general current, which sets to the north, and which then takes its departure from the fourth degree south to join the general current, does not enter the Gulph of Guinea, on account of the prodigious retreat of that gulph; so that, in this part only, the sea always runs eastward, according to the observation of all the navigators by whom it has been visited.

I shall support the principles of this theory by facts attested by navigators of the highest character for veracity. Dampier, in his Treatise on the Winds, says of the currents of the ocean: "But it is certain that, in all parts of the world the currents shift at certain times of the year; as in the East Indies they run from east to west one part of the year, and from west to east the other part: or as in the West Indies and Guinea where they shift only about a full moon. This is meant of parts of the sea near any coast; yet there are strong currents in the wide ocean also, setting contrary to the rules before-going; I mean against the trade, but it is not common.

"On the coast of Guinea the current sets east except at or near a full moon, but to the south of the Line, from Loango to 25 or 30 degrees, the current sets with the wind from south to north, except near the full.

"To the eastward of the Cape of Good Hope from 23 to 24 degrees south, the currents from May till October set east-north-east, and the winds then are west-south-west, or south-west; but, from October till May, when the winds are between the east-north-east and east-south-east the currents run to the west. These currents are thus found from five or six leagues off the shore to about fifty; within five leagues of the shore you have the tide, and not a current; and being past fifty leagues off shore the current either ceaseth quite or is imperceptible.

"On the coast of India, north of the Line, the current sets with the monsoon, but does not shift altogether so soon, sometimes not by three weeks or more, and then never shifts again till after the monsoon is settled in the contrary way. As for example, the west monsoon commences at the beginning of April, but the current does not shift till the beginning of May; so when the east monsoon sets in about the middle of September, the current does not shift till October."

Dampier seems to ascribe the cause of these currents to the winds which he calls monsoons. But this is not the proper place for investigating the cause of the atmospheric revolution, which likewise invariably depends on the poles, whose atmospheres are more or less dilated in winter than in summer, and whose revolutions must precede those of the ocean. I shall confine my attention to the retardation of the western current, which does not take place in India till the month of May, in order to demonstrate, that it is the same which issues from our pole in March, and arrives in the various regions of India at periods proportioned to their distance from the point from which it set out.

This current, then, arrives about the month of April at the Cape of Good Hope, and it is this that renders the passage of the Cape so difficult to vessels returning from India in summer. I shall once more support myself on this subject with the authority of Dampier, who says, in his Voyage round the World, on his return from India to

Europe:—"Besides we should lose our passage about the Cape till October or November, this being about the latter end of March; for after the 10th of May it is not usual to beat about the Cape to come home." In addition to this, the Dutch East-India Company do not permit their ships to remain there later than the mouth of March, because from that period west winds prevail, and a regular current sets from the west and drives vessels out of their track; whence it is clear, that this current, which comes from the west and doubles the Cape, arrives there about the mouth of April.

From the preceding passage of Dampier, we have seen that the western current arrives on the coasts of India about the middle of May; another authority will demonstrate that it reaches, toward the middle of June, the island of Tinian, which is much farther to the east. I extract it from Anson's Voyage, chap. xiv. in the year 1742, on the subject of the island of Tiniau: "The only anchorage for large ships is in the south-west part of the island. The bottom of this road is filled with very sharp rocks of coral. It is dangerous to anchor there from the middle of June to the middle of October, which is the season of the western monsoons; and the danger is still farther increased by the extraordinary rapidity of the current of the tide which sets in to the south-west between this island and that of Agnigan. During the other eight months of the year, the season there is steady." Observe, by the way, that the monsoon or the current comes from the west, and the tide runs in a contrary direction between these two islands, which confirms what we have said, that the tides are in general only counter-currents of the general currents confined by streights.

It is, therefore, evident, that this current, which takes its departure from our pole in March, arrives off the Cape of Good Hope in April, on the coasts of India in May, at the island of Tinian in the middle of June, and that it traces, round the globe, the spiral line which I have indicated

its velocity might be calculated by the time it occupies in running over each of these distances and in reaching other points, till it arrives at Cape Horn, whence it proceeds north as far as Cape St. Augustin, and there meets the general current of the Atlantic toward the conclusion of July. But the detail of so many curious circumstances would lead me too far.

It is impossible, in any way, to ascribe the general currents of the Indian Ocean, which, as I have observed, set for six months to the east, and for six months to the west, to the attraction or the pressure of the sun and moon between the tropics: for those luminaries always proceed the same way, and their action is invariably the same, within the extent of that zone, to which they are confined. Moreover, if their action were the cause of it, when the sun is to the north of the Line, the western current ought to be perceived on the coasts of India in the month of March, when he is nearly in the zenith of the Indian Ocean; but it does not take place there till six weeks later, that is, in May. When, on the contrary, the sun is to south of the Line, and at the greatest distance from the Indian Ocean, the eastern current arrives there a little after the autumnal equinox, that is, in the month of October. Hence it is evident, that these revolutions of the Indian Ocean have not their focuses under the equator, but at the poles; that the revolution of the mouth of March, which comes from the north, by the west, requires six weeks to reach India, on account of the vast circuit it is obliged to make round the Cape of Good Hope; that the revolution of the south pole, in the month of September, arrives there much sooner by the east, because it has no circuit to make; and finally, that the period of these alternate revolutions commences precisely at the equinoxes, that is, at the moment when the sun withdraws from one pole to warm the other.

It is therefore evident that the half-yearly and alternate currents of the Indian Ocean owe their origin to the half-

yearly and alternate fusion of the ices of the north and south pole, and that their direction from east to west, and from west to east, is determined in that ocean by the very projection of the continent of Asia.

The Atlantic Ocean has, in like manner, two half-yearly and alternate currents, which have the same origin, but a natural direction from north to south and from south to north, though with some deviation from west to east and from east to west, occasioned by the projection of the channel of the Atlantic. Our navigators imagine, that this channel has but one regular current, running invariably from south to north in our hemisphere. Into this error they are led by the course of the tides, which, it is true, always set to the north on our coasts, and on those of the Bahamas, and still more by our astronomical system, which ascribes all the movements of the seas to the action of the moon between the tropics.

How many errors is it possible for a single prejudice to introduce into the elements of our sciences! It blinds the most enlightened men, to such a degreee, as to cause them to mistake demonstration itself, and to reject, for a long series of ages, the experience which every year is accumulating!

I have collected from a multitude of voyages, and principally from those which Captain Cook performed round the world, with equal sagacity and intelligence, a great number of nautical observations, which prove, that the currents of the Atlantic Ocean are half-yearly like those of the Indian Ocean. Yet the very persons by whom they are related, prepossessed with the idea that the moon's action between the tropics is the sole cause of the motion of the sea, and being unable to reconcile these currents to the course of that luminary, have drawn from them no other conclusion, than that they are naturally irregular, and that their cause is inexplicable. Had they confined themselves to their own experience, which taught them that these currents changed twice a year; that they

run, in the Indian Ocean, six months with the course of the moon, and six months directly opposite to it; and in the Atlantic Ocean, in directions which had no relation whatever to the course of that luminary; that they are much more rapid as you approach the poles than between the tropics, under the very gravitation of the moon; and lastly, that they diverge from the pole, heated by the sun, towards that which he has abandoned, they would then have referred the causes of these variations to the summer and winter of each hemisphere, and they would have dispersed a portion of those clouds of error, in which our pretended sciences have veiled the operations of Nature. Though these nautical observations are decisive in my favor, since they were made by enlightened partisans of the astronomical system, to which they are in direct opposition, while they confirm the truth of my theory. I shall however quote two still more curious, more authentic, and more impartial, because they were made by men, who, not being bred to the sea, were wedded neither to the prejudices nor to the systems of the profession. One is authenticated by the inhabitants of a whole kingdom, and the other by one of the most dreadful engagements recorded in the naval annals of Europe; and both confirm, in a wonderful manner, one of the most agreeable harmonies of the vegetable history of Nature, the elements of which I have presented in the emigration of plants.

By the first of these observations we shall prove, that the Atlantic current proceeds, in fact, from the south and sets to the north, according to the opinion of our navigators, but only in our winter. It is, however, produced in this direction by the effusions of the ices of the south pole, which, in our winter, flow towards the north, and not by the action of the moon between the tropics, as our astronomers believe, because, in that very season, the navigators of the southern hemisphere have found beyond the tropics, this same current coming from the south, which, assuredly, would not be the case, were it produced by the action of

the moon on the equator: for, according to this hypothesis, it would flow in a contrary direction in the southern hemisphere. Now, this is not the fact, as I am able to demonstrate from the journals of Abel Tasman, Dampier, Frezier, Cook, and others, who found, even beyond the tropics, in the southern hemisphere, this current, setting from the south, but only during our winter.

By the second of these observations, we shall demonstrate, that the Atlantic current proceeds from the north, and sets to the south, in our hemisphere, contrary to the opinion of navigators, but only during summer. It proceeds, therefore, directly from the effusions of the ices of the north pole, which in our summer flow to the south, and by this direction toward the equator, it evidently destroys the pretended action of the moon between the tropics, which, according to our astronomers, impels the ocean toward the two poles.

The first of these observations is related by Mr. Thomas Pennant, a celebrated English naturalist, without prejudice and without system, at least on this important subject. It is extracted from his Tour to the Hebrides and the West of Scotland, in 1772.

"I was also favored," says this traveller, speaking of the island of Ilay, "with several of the nuts commonly called Molucca beans, which are frequently found on the western shores of this and the other Hebrides. They are the seeds of the *Dolichos urens*, *Guilandina Bonduc*, *Bonducetta* and *mimosa scandens* of Linnæus, natives of Jamaica. The fifth is a seed called, by Bauhin, *fructus exot, orbicularis sulcis nervisque quatuor*, whose place is unknown. The four first grow in quantities on the steep banks of the rivers of Jamaica, and are generally supposed to drop into the water and to be carried into the sea; from thence by tides and currents, and the predominancy of the east wind, to be forced through the Gulph of Florida into the North American Ocean in the same manner as the Sargusso, a plant growing on the rocks of the seas of Jamaica. When

urrived in that part of the Atlantic, they fall in with the western winds, which generally blow two thirds of the year in that track; which may help to convey them to the shores of the Hebrides and Orkneys. I was for resolving this phenomena into shipwrecks, and supposing that they might have been flung on these coasts out of some unhappy vessels, but this solution of mine is absolutely denied from the frequency and regularity of the appearance of these seeds. American tortoises or turtle have more than once been taken alive on these coasts, tempest-driven from their warm seas; and part of the mast of the Tilbury man-of-war burnt at Jamaica, was taken up on the western coast of Scotland; facts that give probability to the first opinion."

Mr. Pennant has neglected to inform us in what season those seeds and those turtles reach the west coast of Scotland. These omissions of dates are essential defects, though extremely common with the generality of travellers, who often omit to mark even those of their own observations. It is, however, these dates alone which enable us to embrace all the harmonies of Nature. What shall we then think of the taste of our compilers of voyages and travels, who retrench them as tedious and unimportant circumstances? In the present case it is, nevertheless, evident, that the seeds of the rivers of Jamaica and the turtles of America arrive in winter on the western coasts of the Hebrides and of the Orkneys, since they are driven thither, according to Mr. Pennant, by the west winds and currents, which, he adds, prevail there two thirds of the year. Now, we know that the west winds blow there all the winter, which is confirmed by his own testimony, all well as by other travellers in Scotland. After all, it cannot be the west wind that wafts those seeds and those turtles so far from Jamaica toward the north. The wind has no power over bodies level with the surface of the water, and certainly those of the west cannot drive them to the north. Even the western currents could not pro-

duce this effect, for they would carry them to the east, and as Jamaica is about 18 degrees north of the Line, these seeds and these turtles would land in that part of the coast of Africa under the same latitude, and not in the 59th degree, in the Hebrides and Orkneys, where they actually come ashore.

Accordingly, the important observations of the inhabitants of Scotland relative to the seeds of Jamaica, the turtles of America, and part of the mast of the Tilbury thrown upon their coasts, certainly prove that the Atlantic current comes from the south and sets to the north, as navigators believe; but it has that direction only in winter; for we shall demonstrate by another observation not less curious, that in summer, and in the same latitudes, the Atlantic current comes from the north and sets to the south, in direct opposition to the action of the moon between the tropics, and contrary to the opinion of navigators, or rather without their knowing what opinion to form on the subject.

We have already adduced the testimonies of the most celebrated navigators of the north, who unanimously declare that the Atlantic current proceeds from the north and sets to the south in summer, in its northern extremity: such are those of Ellis, of Barentz, of Linschoten, &c. who, having navigated in summer in the vicinity of the arctic polar circle, affirm that the currents and even the tides run in a southern direction, and come from the north, or at least from the north-east or north-west according to the position of the bays into which they penetrate. We have likewise produced, in support of this important truth, the testimony of the navigators of North America, quoted by Denis, governer of Canada, who attest that the currents of the north carry with them every year in summer towards the south, long shoals of floating ice, of considerable depth and elevation, which run aground so far south as the bank of Newfoundland. Lastly, we have quoted the observation of Christopher Columbus, who in a much

more southern latitude, approaching even to the tropic of Cancer, found, in September, that the middle of the Atlantic channel ran southward, and consequently descended from the north. To these authorities we might add those of a multitude of other navigators, who have paid attention only to the lee-way of their ships, and have been convinced, in summer, of the existence of this northern current, without daring to assert it, or venturing to oppose their own experience to a received astronomical system.

But in order to omit nothing on a subject so essential to navigation and to the study of Nature, and to remove every possibility of doubt as to the existence of this northern current in summer, I shall introduce a simple observation, but which is connected with an event which is well known in history. This observation is the less liable to suspicion, as it is related without an intention of favoring any system, by a traveller who was neither a mariner nor a naturalist, and who deduced from it no other conclusions than such as concerned his fortune and his liberty. It is that of Souchu de Rennefort, secretary to the supreme council of Madagascar, on leaving the Azores the 20th June, 1666, on his return to Europe.*

"From the latitude of 40 to that of 43 degrees," says he, "we saw broken masts, yards, and tops of ships, which caused us to imagine that some terrible disaster had taken place. We were under considerable apprehension lest these fragments should run foul of the Virgin, an old crazy ship and very leaky. We afterwards learned that this wreck had been occasioned by the naval engagement between the French and the Dutch on one side, and the English on the other. It would have been desirable for those on board to have known this sooner."

In fact, the vessel on board which Rennefort was, and whose crew knew not that France was at war with England, had the misfortune to be taken and sunk by an

* History of the East Indies, Book III. chap. v.

English frigate, off Guernsey, eighteen days after this observation, that is on the 8th July.

This horrible devastation, scattered over the sea through a space of 3 degrees or 75 leagues, proceeded from an obstinate engagement fought on that element, between the English on one side, and the Dutch on the other. It began on the 11th June, and continued four days. The English fleet was composed of 80 men of war, and the Dutch fleet of 90, commanded by De Ruyter. There were on each side nearly 21 thousand men, and 4500 guns. On this occasion the English lost 23 ships, most of which were burned or sunk, and the Dutch only four; but there was scarcely a vessel which had not lost her masts entirely or in part. About nine thousand men perished on both sides. The historians of each nation, as usual, extolled the glory of their own fleet to the skies.* So much, at least, is certain, that the nine thousand mangled and half-roasted human bodies, consigned to the sharks and sea-dogs, presented to the monsters of the deep the spectacle of a ferocity, unexampled excepting in the annals of the human race; and that this prodigious number of floating tops, masts, and yards, mingled with flags bearing red crosses and white crosses, proceeded to inform the barbarians of all the southern shores of the Atlantic

* The statement given above by our author is evidently that of the Dutch historians. According to the English writers the battle commenced on the first of June, and was renewed the three following days by the brave Duke of Albemarle, notwithstanding his inferiority in point of numbers. The loss of the English is by them admitted to have amounted to 16 men of war, ten of which was sunk and six taken; and between five and six thousand men killed and wounded. The Dutch, it is asserted, lost fifteen ships and five thousand men; their own writers acknowledge the loss of nine men of war, and that a prodigious slaughter was made on board those which escaped. Such was the conduct of the English on this occasion, that it extorted from their inveterate enemy, De Witt, this remarkable acknowledgement, that "if the English were beaten, their defeat did them more honor than all their former victories; and all the Dutch had discovered was, that Englishmen might be killed and English ships burned, but that English courage was invincible." T.

Ocean, how powers pretending obedience to the laws of Jesus Christ, settle their differences.*

* These wrecks were undoubtedly carried much farther than the Azores. It is probable, that, in this season, a great portion of them floated to the shores of the western islands of Africa. Now the ground of the quarrel between England and Holland was precisely the African slave-trade. These powers had, as early as the preceding year, commenced hostilities on the coasts of Guinea and the Cape de Verd islands, to the ruin of those countries. I suppose, therefore, that these wrecks from the engagement off Ostend passed among the Cape de Verd Islands, and near that of St. John, which is so little frequented by Europeans, that it is called by the Portuguese *Brava*, Savage. Its good and hospitable inhabitants, according to an English navigator named Roberts, who speaks from his own experience of their good-nature, are so humble, that they look upon men of their own color as subjected by the Almighty himself to the yoke of white men. In this opinion they are confirmed by observing the balance of European commerce, which in one scale presents to Europe nothing but benefits, while the other, weighed down with calamities, presses incessantly on wretched Africa. But when, from the summits of their rocks, from the shade of their cotton-trees and bananas, they beheld along their peaceful shores, this frightful train of masts, yards, galleries, poops, prows, half-burned, stained with human gore, and intermingled with European flags, they then saw the scale charged with the miseries of Africa rise for a moment, and the other sink with aggravated weight on Europe; and in this reaction of calamities, they undoubtedly perceived, that an universal justice governs, with equal laws, all the nations of the globe.

A king of France is said to have ordered the bodies of malefactors to be thrown into the river, with this dismal inscription: *Let the King's justice pass.* The Chinese and Japanese punish, in the same manner, the pirates who annoy the navigation of their rivers. Thus the wrecks of these ships of war which had so often diffused terror over the Atlantic ocean, were hurried away by its currents; and their enormous hulls, blackened by fire, reddened with human blood, and now become a sport to the winds of Africa, said much more distinctly than any inscription, to the oppressed inhabitants of its shores; "Behold now, O ye black men! the glory of the whites, and the justice of God passing along!"

It would be an investigation worthy, I do not say of our modern politicians, who set a value on nothing in the world excepting gold and power, but of a friend of humanity to examine, whether the slave-trade has not been productive of as much misery to Europe as to Africa, and what are the benefits it has conferred on those two divisions of the globe.

It would first be necessary to place in the balance the calamities of Africa, the wars which its potentates wage with each other for the purpose of procuring slaves to sell to the Europeans; the barbarous despotism of its kings, who for the attainment of this object dispose of their own subjects; the unnatural character of those subjects, who, after their example, sometimes drag to these inhuman markets their wives and their children; the depopulation of most of the maritime countries of Africa, by the emigration of their inhabitants, hurried away into slavery; the mortality of a great number of these wretches, who, during the passage to America, perish by unwhole-

These wrecks, scattered over 75 leagues of ocean, came from about twelve miles to the north-west of Ostend, where this naval engagemement took place; and they were conveyed to the Azores, which Rennefort's ship had just left when it fell in with them. Ostend is in the 51st degree north, and the Azores in the 40th, considerably to

some food, and the scurvy, and by excessive labour, want of provisions, ill usage and cruel punishments in our colonies, where most of them become the victims of misery, mortification, and despair.

Here undoubtedly, is a sad detail of tears and of blood on the African side of the account. But on the part of Europe the balance of evils will, at least, be equal, if we place on that side the very navigation of the African coasts, the unhealthy air of which sweeps off whole crews at once, as well as the garrisons of our settlements, by dysentery, scurvy, putrid fever, and especially by the fever peculiar to Guinea, which in three days brings the stoutest man to his grave. Add to these physical evils the moral maladies of slavery; which destroy in our American colonies the first sentiments of humanity; because where there are slaves, tyrants spring up, together with the influence of this moral depravation on Europe. When we further add to the evils of this part of the world, the loss of the resources which the agriculture of America would afford to our own commonalty and peasantry, numbers of whom are languishing at home in misery for want of employment; the wars kindled by the slave-trade among the maritime powers of Europe; the taking and retaking of their settlements; their naval engagements, which sweep away nine thousand men at once, exclusive of those who are maimed for life; their wars, which, like a pestilence are communicated to the interior of Europe by their alliances, and to the rest of the world by their commerce: we shall be obliged to confess that the European evils is a complete balance to those of Africa. As to the balance of benefits, it is reduced, on either side, to a very narrow compass. We cannot, in conscience, enumerate among the advantages which the natives of Africa derive from the sale of their countrymen, our iron sabres with which they mangle each other, our wretched firelocks with which they knock one another on the head, and our spirituous liquors which deprive them both of their reason and their health; the whole is therefore reduced, on their part, to a few mirrors and bells. With respect to the benefits which Europe receives, there is sugar, coffee, and cotton, with which America supplies us by means of the labour of negro slaves: but these rude and imperfect productions cannot be compared to the finished manufactures, and the crops of every kind, which might be raised in the same fields by free, happy, and intelligent European cultivators.

I should think that if this balance of evils so oppressive, and of benefits so insignificant were presented to the maritime and christian powers of Europe, they would, at length, discover, that it is not sufficient to have banished slavery from their own territory, in order to render their subjects industrious and happy, but that they must likewise abolish it in their colonies, for the welfare of those very subjects, for the happiness of the human race, and for the glory of religion.

the west. The first of these wrecks took their departure from Ostend the 11th of June, the day on which the engagement commenced, according to the letter of De Ruyter and the history of France, and they had nearly reached the Azores the 20th of the same month, as must be concluded from the narrative of Rennefort, though he has not mentioned the date of each particular day. The currents of the north had, accordingly, carried them more than 275 leagues to the south, which, exclusive of the considerable distance they had made to the west, amounts to more than 34 leagues a day.

It was assuredly not the wind which drove these fragments to the south-west with such rapidity; that which then prevailed blew in a contrary direction. Rennefort's ship, when she fell in with them, had met with no other wind than that which impelled her towards the north-east: and Ruyter, in his letter, makes mention only of south-west winds which blew during the engagement. Besides, as we have before observed, how could the winds have any power over objects level with the surface of the water? It is equally impossible that they should have been carried to the south by the tides which set from the north on our coasts: so that it must have been a direct current from the north which wafted them to the south in opposition to the tides, and somewhat to the west by the direction of the Atlantic channel. The Atlantic current, therefore, sets to the south in summer, notwithstanding the pretended action of the moon between the tropics, and its course at that season is owing solely to the melting of the northern ices.

These two observations of such unquestionable authenticity, tend to confirm a position laid down elsewhere, that the islands are placed at the extremities of currents. Linschoten who had resided in the Azores, remarks, that the fragments of most of the ships wrecked in the Atlantic Ocean are thrown upon their coasts. The same thing happens on those of the Bermudas, Barbadoes, and others.

These floating bodies are carried to prodigious distances, regularly and alternately, like the currents of the sea themselves. Thus the seeds of Jamaica are wafted in winter as far as the Orkneys, more than 1060 leagues from south to north, and a distance of above 1800 leagues, by the flux of the south pole; and, undoubtedly, the fluviatic seeds of the Orkneys are conveyed, in summer, to the coasts of Jamaica, by the flux of the north pole. The same correspondencies must subsist between the vegetables of Holland and the Azores. I am not acquainted with any of the seeds peculiar to the banks of the rivers of Jamaica, but I am certain that they have all the characters I have observed in fluviatic plants. Here then is a new confirmation of the vegetable harmonies of Nature in the emigration of plants. It may likewise be applied to the emigration of fishes, which make such long journies through the main sea, guided, undoubtedly, by the floating seeds of fluviatic plants, for which they manifest in every country a decided preference, and which Nature produces on the banks of rivers to serve more particularly for their nourishment.

It appears to me that mankind might, by means of the alternate currents of the ocean, maintain a regular correspondence, without expence, in all the maritime countries of the globe. It might perhaps be possible, by their means to turn to account those vast forests in the north of America and of Europe, composed principally of fir-trees, which rot in those desert regions, without yielding any benefit to man. They might be committed in summer, in well compacted floats, first to the currents of the rivers and then to those of the sea, which would waft them at least, to the latitude of our coasts stripped of wood; as the current of the Rhine conveys annually to Holland a prodigious quantity of oak felled in the forests of Germany. The wrecks of the sea-fight off Ostend, carried with such rapidity to the Azores, demonstrate the extent of the resources which Nature offers in this way. Geography

might likewise derive from them important advantages. To the effects of these currents Christopher Columbus was indebted for the discovery of America. A simple reed of foreign growth, thrown upon the western coast of the Azores, suggested to that great man the idea of the existence of other regions in the west. He farther thought to avail himself of the currents of the sea, on his return from his first voyage; for being in imminent danger, of perishing in a storm, in the midst of the Atlantic Ocean, without having it in his power to inform Europe, which had so long slighted his services and his sagacity, that he had, at length, discovered a new world, he inclosed the history of his discovery in a cask which he consigned to the waves, hoping that it would arrive sooner or later at some shore. A common glass bottle might preserve such a deposit for ages, and convey it more than once from one pole to the other. It is not for the sake of haughty and unfeeling men of science, who refuse to see in Nature what they have not imagined in their closets, that I dwell on the application of these oceanic harmonies. No, it is for you unfortunate mariners! It is from the mitigation of your miseries that I one day expect my noblest, my most durable recompence. Perhaps, at some future period, one of your number, shipwrecked on some desert island, shall charge the currents of the sea to announce his disaster to some inhabited region, and to implore assistance. Perhaps some Ceïx perishing amid the tempests of Cape Horn, shall confide to them his last farewell; and the billows of the southern hemisphere shall speed it to the shores of Europe to soothe some new Alcyone.

After the facts which I have just detailed, it is impossible to doubt, that the Indian and Atlantic Oceans have their sources in the half-yearly and alternate fusions of the ices of the north and south pole, since they have half-yearly and alternate currents perfectly corresponding to the summer and winter of each pole. These currents, as may easily be conceived, have greater velocity than the

objects floating on their surface. At the equinoxes a retrogressive impulsion is produced in the whole mass of their waters at once, as appears at those periods from the universal agitation of the ocean in every latitude. This general and almost instantaneous convulsion cannot be effected by the attraction of the moon and of the sun, which always proceed in the same direction, and are constantly between the tropics; but, as I have frequently repeated, it is produced by the heat of the sun, which then passes almost instantaneously from one pole to another, melts the icy ocean which covers it, supplies, by the effusion of these ices, new sources to the fluid ocean, gives opposite directions to its currents, and overthrows the former equilibrium of its waters.

Still less is it possible to deduce, as some have done, the cause of the tides from the action of the sun and of the moon on the equator; for, if it were so, they must be more considerable between the tropics, near the focus of their motion, than in any other part; but this is not the case. Hear what Dampier says, in his Treatise on Winds, concerning the tides of India, near the equator:—

"From Cape Blanco" (on the coasts of the South Sea) "in about three degrees south to thirty degrees south, the tides are smaller. There they rise not more than a foot and a half, or two feet.—In the East Indies also, the tides are but small on most coasts, neither are they so regular as with us." He relates in another place that the highest tide he observed on the coast of New Holland, happened only three days after the full or new moon.

The weakness and the considerable retardation of these tides between the tropics, clearly demonstrate that the focus of their movements is not under the equator; for, if it were, the tides would be tremendous on the coasts of India, which are in its vicinity and parallel to it: but their origin is near the poles, where they rise indeed, from twenty to twenty-five feet near the Streights of Magellan, according to Sir John Narborough, and to a height

equally considerable at the entrance of Hudson's Bay according to Ellis.

Let us now recapitulate.—The tides are semi-diurnal effusions of the ices of the poles, as the general currents of the sea are half-yearly effusions from them. There are two opposite general currents in a year, because the sun alternately heats the southern and northern hemisphere; and there are two tides every day, because that luminary warms by turns every twenty-four hours, the eastern and western side of the pole that is in fusion. It is the same effect as we observe in many lakes in the vicinity of icy mountains, which have currents and an ebb and flood in the day-time only. It cannot be doubted, that if the sun were to warm the opposite side of the mountains in the night, another ebb and flood would be produced in their lakes, and they would consequently have two tides in twenty-four hours like the ocean. The retardation in the tides of the ocean, of about twenty-four minutes from one to the other, is caused by the daily diminution of the diameter of the icy dome of the pole in fusion. The focus of the tides, consequently, removes farther and farther from our coasts. If their intensity is such, as Bouguer asserts, that our evening-tides are the strongest in summer, it is because they are the diurnal effusions of our pole produced by the heat of the day in the sultry season. If, during the same season, they are less strong in the morning than in the evening, it is because they are the nocturnal effusions, which issue from the other part of the pole, and discharge themselves into the spiral sources of the Atlantic Ocean, but in less quantity. If, on the contrary, at the end of six months, the strongest tides, that is, those of the evening, become the weakest, and the weakest, that is, those of the morning, become the strongest, the reason is, because they then proceed from the action of the sun on the south pole, and, as the cause is opposite, the effects must be so likewise. If the tides are highest one day and a half or two days after the full moon, it is because that

luminary by her heat augmeats the polar effusions, and consequently the mass of water in the ocean. The moon has a heat, which not only evaporates water, as has been recently ascertained at Rome and at Paris, but which melts ice, as Pliny relates, in conformity to the observations of antiquity: "The moon produces thaw, resolving all ices and frosts by the humidity of her influence." Finally, if the tides are more considerable at the equinoxes than at the solstices, it is because, as we have seen, at the equinoxes there is a greater mass of water in the ocean, for the greatest part of the ices of one of the poles is then melted, and those of the opposite pole are beginning to dissolve.

We must not imagine that every tide is a polar effusion of the day on which it happens; but it is an effect of that series of polar effusions which are perpetually succeeding each other: so that the tide which happens to-day, on our coasts, took its departure from the pole, perhaps, six weeks ago, and its movement is kept up by those which flow each succeeding day. Thus, in a row of balls placed on a billiard-table, the first which receives an impulsion, communicates it to the next, and that one to the following, and the last only is detached from the row with the remainder of the moving force. But here we must admire another concordance which pervades the most remote effects of Nature; it is this, that the evening and morning tides arrive on our coasts as if they had that very day issued from the upper and lower part of our hemisphere; and that the tides of summer are precisely opposite to those of winter, as the poles from which they flow.

I might support this new theory with a multitude of facts, and apply it to most of the nautical phenomena hitherto looked upon as inexplicable, but the time and space left me forbid it. I shall content myself with having deduced from it the principal movements of the ocean. I have been obliged to follow the windings of this labyrinth with a labor of which the reader can have no idea. I

have shewn him the entrance and the outlet and I now present him with the clue. He may, undoubtedly, proceed much farther without my assistance. I can assure him, that by availing himself of these principles, in the perusal of journals and narratives of voyages which have the least accuracy in the dates of their observations, such as those of Abel Tasman, Hugo de Linschoten, General Beaulieu, Froger, Frezier, Dampier, Ellis, &c. he will find a new light diffused over those passages of marine journals which are in general so dry and so obscure.

Had time and my means permitted me to give to this part of my subject all the illustration of which it is susceptible, I flatter myself I should have rendered it much more interesting. I would have procured a representation on two large, solid globes, of the general currents of the ocean in winter and summer, with arrows which should have expressed the exact intervals between one tide and another and their lateral counter-currents at the passage of all the streights, which produce, on different coasts, the counter-tides, semi-diurnal, diurnal, weekly, monthly, and half-yearly. These counter-tides should have produced others on their return to the passage of islands, so that the ocean would have been exhibited as a vast river issuing from each pole, encompassing the globe and forming on its shores a multitude of counter-currents and counter-tides, dependent on the effusions of a single pole. For this purpose I should have employed the most authentic nautical journals.

It would then have been evident, that the bays of the continents; and even of the islands, are sheltered from the general currents; and I should have shewn, on the contrary, that the course and the direction of all rivers are adapted to these currents and to these tides of the ocean, to accelerate them in certain places and to retard them in others, as the courses of inferior streams are adapted to the currents of rivers, for the same purpose.

I would have done still more. In order to banish the

dryness which pervades our geography, and to unite the graces which all kingdoms of Nature mutually impart to each other, instead of arrows, I would have illustrated my subject by figures more analagous to the seas, and have added new proofs to the theory of the polar effusions, by representing various species of migratory fishes, which, at certain periods of the year, consign themselves to their currents to pass from one hemisphere to the other. So much is certain, that the principal point of their union, as well from one pole as the other, is precisely at the streight formed by Guinea and Brasil, where, as we have said, those two great lateral counter currents which return towards the poles are formed. There is the rendezvous of the fishes of the north pole and of those of the south. Herrings, whales, and mackarel, are in summer found, in abundance, on those shores. The whales of the north were formerly so common at Brasil, that, according to the accounts of navigators, the fishery on its coasts was farmed out and produced a considerable revenue to the king of Portugal. I know not how it may be at present; probably the thunder of European artillery may have scared them from those coasts. Great quantities of the cod, known all over America, by the appellation of the Brasil cod, were likewise caught there. On the other hand, according to the Dutch writer, Bosman, who published a very good account of Guinea, the whales of the species called *Nordcaper*, abound on the coasts of Guinea. He asserts that they frequent those parts to bring forth their young. Artus has given a list of the migratory fishes which appear on the same coast at the different seasons of the year. Though it is very imperfect we may distinguish from it the fishes peculiar to each pole. In the months of April and May a species of ray rises to the surface of the water; in June and July, a kind of herring appears in such numbers, that the negroes, throwing among them a leaden weight at the end of a long line furnished with hooks, always take several at a single throw. During the same

months they catch a great number of sea-crabs, which according to Artus, resemble those of Norway. In September various species of mackarel arrive in numerous shoals. At the same time appears a kind of mullets, which, unlike all other fishes, that delight in silence, flock to noise. The negroes avail themselves of this instinct to catch them. To a piece of wood surrounded with hooks, they fasten a kind of cornet with its clapper; thus furnished, they throw it into the sea, and the movement of the waves shaking the cornet produces a certain noise; this attracts the fish, which, attempting to bite the piece of wood, is caught. Thus bounteous Nature furnishes the poor negroes with fisheries adapted to their industry. This species of mullet seems, from its instinct, to be intended to travel through turbulent seas, since it appears only at the autumnal equinox amid the revolution of the seasons. But, in the months of October and November, arrive crowds of fishes, whose names and manners are unknown in Europe, and which seem to belong to the south pole, whose currents are then in activity. Such are, a sea pike or jack, whose teeth are extremely sharp, and his bite very dangerous; a species of salmon, with white flesh, of exquisite flavor; another called the sea-star; a kind of sea-dog, with a very large head and jaws resembling a warming-pan; it is marked on the back with a cross; some of them are of such a size that a single fish is sufficient to load two or three canoes. In December, are seen vast quantities of the korkofedo or moon-fish, which likewise appear in June. The korkofedo seems to regulate his progress by the solstices. He is as broad as long, and is caught with a piece of sugar-cane fastened to a hook. The fondness of this fish for the sugar-cane is another proof of the harmonies established between the fishes and vegetables. Lastly, in the months of January, February and March, may be seen on the coast of Guinea, a kind of small fish with large eyes, which Artus supposes to be the *oculus*, or *piscis oculatus* of Pliny. This is likewise an inhabitant of the boisterous

seas of the equinox, leaping and frisking with a great noise.

Had time permitted, I would have extended these elementary harmonies to the different inhabitants of the departments of the sea. We should have seen, for example, the cause of the alternate passage of turtles, which annually repair, for six months to certain islands, and are found six months afterwards in others, at the distance of seven or eight hundred leagues, rendering it impossible to conceive how an amphibious animal, so sluggish, can perform such immense journeys towards places it does not perceive. We should see their heavy-sailing fleets, resigning themselves, almost without motion, during the night, to the general current of the ocean, coasting by moon-light along the gloomy promontories of islands, and seeking, in their desert bays, some sandy and peaceful beach, where, far from noise, they might deposit their eggs. Others, as the mackarel, never fail to arrive, in the accustomed seasons, on other shores, with the same currents, for they are then blind. "When the mackarel arrive on the coasts of Canada," says Denis, formerly governor of that country, "they are quite blind. They have a speck over their eyes, which does not fall off till the end of June; and from that time they see and are caught with a line." His testimony is confirmed by other travellers, though there was no necessity for it. The silvery legions of other fishes, as herrings, glisten in the sun on the northern strands of Europe and of America shadowed with firs, and advance till they arrive beneath the palm-trees of the Line, coasting along the shores against the tides of the south, which are incessantly bringing them fresh supplies of food. Others, as the tunny, take their departure from the Line, assisted in their progress by those very tides, and in the spring enter the Mediterranean, of which they make the complete circuit: and though they leave behind no trace of their liquid route, yet they never fail to render themselves visible, in the midst of the darkest nights, by the

gleam of the phosphoric fires which their motion excites. It is by means of the same lights that the dusky tortoise is perceived at night, on the surface of the waters. You would imagine that these animals, surrounded with light, had flambeaux affixed to their fins and to their tails. Thus the phosphoric qualities of sea-water are connected even with the nocturnal voyages of its fishes.

It is the sun that is the grand mover of all these harmonies. Having arrived at the equinox, he abandons one pole to winter, and gives to the other the signal of spring, by the fires with which he surrounds it. The heated pole pours forth on every side torrents of water and melted ice into the ocean, which it supplies with new sources. The ocean then changes its course; it carries along in its current most of the fishes of the north toward the south, and by its lateral counter-currents, those of the south toward the north. Others are attracted from it to the continent by the alluvions of the land which the rivers discharge; such are the fishes with scales, as the salmon, which love, in general, to make their way against the currents of the rivers.

These floating legions are accompanied by innumerable squadrons of sea-fowl, which, quitting their natural climates hover round the fishes to live at their expence. It is then that we observe the sea-fowls of the south, as the pelican, the flamingo, the crab-catcher, the heron, flocking to the shores of the north; and the birds of the north, as the booby, the penguin, the cormorant, flocking to those of the south. It is then that the most desolate sands and shallows are inhabited, and that Nature presents new harmonies on every shore.

If the voyages of the inhabitants of the seas would have diffused new light over the currents of the ocean, these same currents would have contributed to illustrate the manners and the forms of fishes which to us appear so extraordinary. Most of these fishes cast their spawn in such abundance, that the sea is sometimes covered with it

for the space of several leagues. The currents carry this spawn to a great distance, and while the parents unconcernedly indulge in the pleasures of love on the coasts of Norway, their progeny are hatched on those of Africa or of Brazil. We should have seen their classes so various, perfectly adapted in figure to the different sites of the ocean; some cut out in long sword-blades, as the African fish, which thence derives its name, delight to penetrate into the narrowest crevices of the rocks, and to make their way against the most rapid currents; others, equally flat, are cut into a circular form, with two long antennæ, which rise from their head and turn back behind to serve for a rudder, as the moon-fish of the Antilles. These moon-fish sport continually in the midst of waves which break against the rocks, and yet not a single one is ever observed to be thrown upon the shore. Other fishes, triangular and formed like a trunk, advance into the very middle of shallows, where there is scarcely any water, and display, on the bosom of the black rocks, their blue shining robes bespangled with stars of gold.* While some, ever restless, search every corner of the beach for prey, others without concern wait for it immoveably at their posts. Some incrusted in heavy habitations of stone, pave the bottom of the shores, as the helmet, the lambi, and the thuilée; others, attached by threads to pebbles, ride at anchor at the mouths of rivers, as the muscle; some glue themselves to each other, as the oyster; others fix themselves to the rocks to which they cling by suction, as the limpit; others

* The triangular, or cuckold fish, belongs to the class of *Ostracion*, the generic name given by Linnæus to various kinds of anomalous fishes, nine of which he has enumerated. They are all inhabitants of hot climates, and resemble each other in having their bodies covered with a bony coat of mail. Some have four horns, others two, and others none. They are of various figures and dimensions, and from their appearance would scarcely be supposed to belong to this division of the animal kingdom. The body of the cuckold-fish is of a triangular form, and is armed with four spines, two on the head and two behind the anus, and these are the characters which distinguish it from the other fishes of the same genus. It is a native of the seas of Jamaica, the Antilles, Guinea, and the East Indies. T.

bury themselves in the sand, as the harp, the screw, the knife-handle, and most of the shell-fish, whose exterior covering is clear and shining; and others, as the lobster and the crab, armed with bucklers and corsets, lie in ambush among the stones, suffering nothing to be seen but the extremities of their horns and of their formidable claws.

If it had been in my power, I would have studied the contrasts formed by these numberless families in the slime and on the rocks, where their shells sparkle with the fires of Aurora, and with the lustre of purple and of *lapis lazuli*. I would have described the regions of the deep, covered with plants of an infinite variety of forms, which receive the rays of the sun only through its waters. Their very vallies, where the currents flow with the rapidity of sluices, produce plants elastic and perforated; such are the leaves of the sea-feather, through which the waves pass as through a sieve. I should have represented their rocks, rising from the bottom of the abyss, like immoveable mounds, their cavernous sides bristling with madrepores, and hung round with waving garlands of fucus, alga-marina, and sea-weeds of every colour, affording a retreat and a bed to the seals and sea-lions. In tempests, their gloomy bases are covered with clouds which emit a phosphoric light, and unutterable sounds, issuing from their devious recesses, invite to their prey the silent legions of the inhabitants of the seas. I would have attempted to penetrate into those palaces of the Nereids, to unveil their mysteries still unknown to man, and to observe at a distance, the footsteps of infinite wisdom impressed beneath the waves; but these laborious, and yet delightful researches, so useful to our fisheries and so pleasing to natural history, are too great for the fortune and the powers of a recluse.

I venture, however, to flatter myself, that the new theory I have presented, relative to the causes of the general currents and tides of the ocean, will be of utility to navigation. It is my opinion, that a vessel, setting out in the

mouth of March with the course of our polar effusions, and keeping in the middle of the Atlantic channel, might, in summer, reach the East Indies, favored continually by the current. This I am also able to prove by the experience of various navigators. It is true, that during this season, which is the winter of the southern hemisphere, the weathering of Good Hope is dangerous, because the western monsoon, which then prevails in those parts, excites frequent storms there as well as on the opposite coasts of India: but I think these inconveniences might be avoided by stretching out into a higher latitude. The same vessel might return from the East Indies, six months afterwards, during our winter, with the effusions of the south pole. On the other hand, advantage might be taken of the counter-currents produced by the general currents, or of their lateral tides, to go and to return in contrary seasons, by coasting along the continents. From this theory other principles for the navigation of all seas might easily be deduced; for example, we may avail ourselves of these currents to discover new islands; for every island is placed at the extremity or at the confluence of one or more currents, as every volcano is situated in their counter-tides.

I here conclude these nautical observations, in which there are, undoubtedly, inaccuracies of style and other imperfections; but I was anxious to give my country this last testimony of attachment. I hope for the indulgence of the truly intelligent, and that they will correct my mistakes.

STUDY V.

REPLY TO THE OBJECTIONS AGAINST PROVIDENCE FOUNDED ON THE DISORDERS OF THE VEGETABLE KINGDOM.

"The earth," say the objectors, "is a garden very injudiciously laid out." Men of genius who never travelled have amused themselves with describing it, when issuing from the hand of Nature, as if it had been the theatre of the war of the giants. They have represented its rivers, flowing at random, its morasses as accumulations of mud, the trees of its forests overturned, its plains covered with rocks, briars and thorns, impervious to the foot of man, and they ascribe all its culture and improvement to the efforts of human genius. Such delineations, though picturesque, have, I acknowledge, overwhelmed me with melancholy, because they inspired me with distrust of the Author of Nature. To no purpose could it be supposed that he had loaded man with blessings; one of our most pressing necessities had been overlooked, if he had neglected to provide us a suitable habitation.

The inundations of rivers, such as those of the Amazons, of the Oronoko, and a great number of others are periodical. They manure the lands which they overflow. It is well known that the banks of these streams were inhabited by numerous nations before the arrival of Europeans; they derived great advantages from their inundations, both on account of the abundance of the fisheries and the fertility they communicated to the land. Far from considering them as convulsions of Nature, they hailed them as blessings from heaven, as did the Egyptians the inundations of the Nile. Could it then be a disagreeable spectacle to them, to behold their vast forests intersected by long channels of water, which they could without trouble traverse in every

direction in their canoes, and gather the fruits with the greatest ease? Nay, even some tribes, as those of the Oronoko, induced by these advantages, had adopted the singular custom of dwelling on the tops of trees, and seeking, like the birds, beneath their foliage, habitations, food and fortresses. Be this as it may, most of them inhabited only the banks of the rivers, preferring them to the vast deserts by which they were surrounded, though not subject to inundations.

We see order only where we see corn growing. The habit we have acquired of confining the channels of our rivers with dykes, of covering our high roads with gravel, of tracing with the line the alleys and basons of our gardens, of squaring our parterres and our very trees, accustoms us to consider all that deviates from our rules as abandoned to confusion. But it is in places with which we have been tampering that we frequently observe real disorder. We make fountains spring up on the tops of mountains; we plant poplars and lime-trees upon rocks; we dispose vineyards in vallies and meadows upon hills. Let these labours be relaxed ever so little, and all these petty levellings will soon be confounded with the general level of the continents, and all human cultivation will disappear before that of Nature. Sheets of water are converted into marshes, the hedge-row elms burst forth into luxuriance, every bower is overgrown, and every avenue closed; the vegetables natural to each soil declare war against those that are exotics; the starry thistle and the vigorous verbascum stifle, beneath their broad leaves, the herbage of the English turf; various species of grasses and of trefoils croud around the tree of Judea; the bramble climbs up the stem with its claws, as if mounting to an assault; tufts of nettles take possession of the urns of the Naïads, and forests of reeds of the forges of Vulcan; greenish flakes of minium corrode the faces of our Venuses, regardless of all their beauties. The trees themselves lay siege to the castle; the wild-cherry, the elm, the maple, mount above its roof, plunge their long pivots into its

lofty pediments, and at length overthrow its haughty cupolas. The ruins of a park are not less worthy of the reflections of the sage, than those of an empire; they alike demonstrate how feeble is the power of man, when he struggles against those of Nature.

I have not had the good fortune, like the first navigators who discovered uninhabited islands, to behold portions of the earth just issuing, as it were, from her hands; but, I have seen some which had undergone so little alteration, that I was convinced nothing could have equalled their virgin beauties. They had a powerful influence over the early relations that were given of them, and diffused over them a freshness, a colouring, a certain inexpressible grace, by which, notwithstanding their simplicity, they will always be advantageously distinguished from the learned descriptions of modern times. To the influence of primitive prospects I ascribe the superior talents of early writers who have treated of Nature, and the sublime enthusiasm which Homer and Orpheus transfused into their poems. Among moderns, the historian of Anson's Voyage, Cook, Banks, Solander, and some others, have described several of these natural sites in the islands of Tinian, Masso, Juan Fernandez and Otaheite, which have delighted all persons of taste, though these islands had been in part mutilated by the Indians and the Spaniards.

It has been my lot to see none but countries frequented by Europeans and desolated by war or by slavery; but I shall ever recollect with pleasure two of those situations, the one on this side the tropic of Capricorn, and the other beyond the sixtieth degree of north latitude. Notwithstanding my inability I shall attempt to draw a sketch of them, in order to convey, at least, some idea, of the manner in which Nature arranges her plans in such opposite climates.

The first was a part, then uninhabited, of the Isle of France, fourteen leagues in extent, which appeared to me the most beautiful portion of it, though the black Maroons,

who take refuge there, had cut down on the sea-shore the lataniers with which they make their ajoupa, and on the mountains the palmettoes, whose tops they use as food, and the lianes with which they manufacture fishing-nets. They likewise dig away the banks of rivulets in searching for the bulbous roots of the nymphæa which they eat, and even the shores of the sea, for the shell-fish, every species of which they devour without exception, leaving large heaps of burned shells here and there on the beach. Notwithstanding these disorders, this portion of the island had preserved traces of its ancient beauty. It is exposed to a perpetual south-east wind, which prevents the forests that cover it from extending to the brink of the sea; a broad selvage of turf of a beautiful green, which borders it, facilitates the communication all around, and harmonizes, on the one hand with the verdure of the trees, and on the other with the azure of the billows. The view is thus divided into two aspects, the one of the land, the other of the water. The land-prospect presents hills rising behind each other in the form of an amphitheatre, and whose contours, covered with pyramidal trees, exhibit a majestic profile on the vault of heaven. Above these forests, rises, as it were, a second forest of palmettoes, waving over the solitary vallies their tall columns, crowned with plumes of verdure, and surmounted with a lance. The mountains of the interior exhibit, at a distance, masses of rock, clothed with large trees and pendent lianes, floating like drapery at the pleasure of the winds. Upon them rise lofty peaks, around which rainy clouds are incessantly collecting; and when the rays of the sun illumine them, you behold the colours of the rainbow painted on their craggy steeps, and the rain-water pouring down the dusky sides in glistening sheets of crystal or in long fillets of silver. No obstacle prevents your perambulating the borders that decorate their sides and their bases, for the streams that descend from the mountains present, along their banks, slips of sand or large flat rocks from which they have washed away the earth. They

moreover clear themselves a free passage from their sources to the places of their discharge, destroying the trees that would grow in their channels, and fertilizing those that stand on their banks. These form above them, in their whole course, long arches of verdure, presenting altogether a most charming perspective, which is visible from the shores of the sea. Lianes interweave themselves in the centres of these vaults, secure their arcades against the winds, and decorate them in the most pleasing manner, opposing to their foliage that of other trees, and to their verdure garlands of brilliant flowers or of variegated pods. If a tree falls by age, Nature, who every where hastens the destruction of useless objects, covers its trunk with maiden-hair of the most beautiful green, and agarics undulated with yellow, red and purple, which feed on its spoils. Towards the sea, the lawn which terminates the island is interspersed with groves of lataniers, among which the palms, formed like a fan, and attached to pliant twigs, radiate in the air like verdant suns.

These lataniers advance into the very ocean, on the capes of the island with the land-birds which inhabit them; while small bays, swarming with sea-fowl, and paved, as it were, with madrepores of the colour of peach-blossom, black rocks covered with rose-coloured nerits, and shells of every kind, penetrate into the island, and reflect, like mirrors, all the objects of the land and of the heavens. You would imagine, that you beheld the birds flying in the water and the fishes swimming in the trees, and would exclaim: "This is truly the marriage of Oceanus and Terra!" which here intermingle and confound their domains. In most, even of the uninhabited islands situated between the tropics, when first discovered, the banks of sand which surround them were found covered with turtle, which repaired thither to lay their eggs, and with scarlet flamingos, which, seated on their nests, resemble brands of fire. They were likewise bordered with mangroves with oysters, that opposed their floating foliage to

the violence of the waves, and with cocoa-trees loaded with fruit, which, advancing along the shoals into the very sea, presented to navigators the appearance of a town with ramparts and avenues, and announced to them, at a distance, the retreats prepared for them by the God of the ocean. These different kinds of beauty must have been common to the Isle of France as to many others, and were, undoubtedly, destroyed to satisfy the necessities of the first navigators who landed upon it. Such is a very imperfect picture of a country, whose climate the ancient philosophers deemed uninhabitable, and whose soil those of modern times consider as a scum of the ocean or of volcanoes.

The second rural scene which gave me particular delight was in Russian Finland, when I was employed in 1764, to inspect its fortresses with the generals of the corps of engineers to which I belonged. We were travelling between Sweden and Russia, in a country so little frequented, that fir-trees had sprung up on the high road which forms the boundary of the two countries. It was impossible to proceed in a carriage, and we were obliged to send peasants to cut them down that our equipages might follow us. We were able, however, to penetrate in every direction, on foot, and often on horseback, though we were under the necessity of inspecting all the windings, the hills, and the smallest recesses of a great number of rocks, to examine the natural defences of the country, and though Finland is so covered with the latter, that ancient philosophers gave it the surname of *Lapidosa* (the Stony).

These rocks are not only scattered in vast blocks over the surface of the earth, but whole vallies and hills are, in many places, formed of a single mass of solid rock. This rock is a soft granite, which exfoliates, and whose fragments fertilize the plants, at the same time that the large masses shelter them from the north winds, and reflect upon them the rays of the sun, by their curves and the particles of mica with which they abound. The bottoms of these

vallies were skirted with long meadows which every where facilitate the communication. In places where the rock was perfectly pure, as in its original state, it was covered with a plant called *kloukva*, which delights in rocky situations. It issues from the clefts and seldom rises higher than a foot and a half, but it creeps in all directions and spreads to a great distance. Its leaves and its verdure resemble those of box, and its branches bear a red berry, fit to eat, resembling the strawberry. The fir, the birch, and the service-tree vegetate wonderfully well on the sides of these hills, though in many places there was scarcely earth sufficient to cover their roots. The summits of most f these hills of rock were rounded in the form of a skull-cap, and glittered with the water trickling down the long fissures by which they were furrowed. Many of these caps were perfectly bare, and so slippery that it was scarcely possible to walk over them. They were crowned all round the top with a broad ring of moss of an emerald green, out of which sprung here and there an infinite multitude of mushrooms of every variety of form and of color. Some were shaped like large cases, of a scarlet color and studded with white spots; others were orange-colored and formed like a parasol; others were as yellow as saffron and elongated like eggs. Some were of the most exquisite white and so round that you would have taken them for ivory draughts-men. These mosses and these mushrooms stretched along the fillets of water which ran from the summits of these hills of rock, extended in long stripes across the woods with which their sides were covered, and skirted their extremities where they were confounded with a multitude of strawberry and raspberry plants. Nature, to indemnify this country for the scarcity of apparent flowers, of which it produces but a small number, has bestowed their perfumes on several plants, as the *calamus aromaticus*, the birch, which, in spring, emits a strong smell of roses, and the fir, the apples of which are sweet-scented. She has likewise diffused the most

pleasing and the most brilliant colors of flowers on the most common of vegetables, such as the cones of the larch which are of a beautiful violet, on the scarlet berries of the service-tree, on the mosses, the mushrooms, and even on the Swedish turnip. On the subject of this last vegetable, hear what the accurate Cornelius le Bruyn says in his voyage to Archangel: "During our residence among them (the Samojedes) they brought us several species of turnips, of various colors and of surprising beauty. Some were violet like our plumbs, others grey, white, yellowish; all were streaked with red, like vermillion, or the most beautiful lake, and as pleasing to the eye as a carnation. I painted some of them on paper in water-colours, and sent a quantity to Holland, in a box filled with dry sand, to one of my friends, a lover of this kind of curiosities. I carried my paintings to Archangel, where nobody would believe that they were copied from Nature, till I produced the turnips themselves: a proof that very little attention is there paid to the rarest and most curious productions of Nature."

These turnips I take to be of the species called *Ruta baga*, or Swedish turnip, the bulb of which grows above the ground. At least I presume so from the drawing which Le Bruyn himself gives of it, and because I have seen such in Finland; they are superior in taste to our cabbage, and have a flavor similar to the hearts of artichokes. I have produced these testimonies of a painter, and that painter a native of Holland, on the beauty of these colors, to overthrow a prejudice which is so general, that in the Indies alone the sun gives a magnificent coloring to vegetables. But in my opinion, nothing equals the beautiful green of the plants of the north, in spring.

I have often admired the verdure of the birch, the turf and the mosses, some of which are glazed with violet and purple. The dark firs themselves are then festooned with the most delicate green, and when they shoot forth from the extremities of their branches yellow tufts of stamina,

they resemble vast pyramids hung round with little lamps. We met with no obstacle in traversing these forests. Sometimes we discovered a birch overthrown by the hand of time and consumed by worms, but when we stepped upon the bark, it supported us like thick leather. The wood of these birch-trees decays very fast, and their bark, which no humidity can rot, is carried by the melting of the snows into the lakes, on which it floats in one entire piece. As to the firs, when they fall, humidity and mosses in a very short time destroy them. This country is intersected by large lakes, which every where present new means of communication, as they penetrate by their long gulphs far into the land, and exhibit a new species of beauty, by reflecting in their placid waters, the openings of vallies, the mossy mountains, and the pines bending over the promontories of their shores.

It would be difficult to describe the hospitable reception we experienced in the solitary habitations of those regions. Their possessors exerted themselves in every possible way, to detain us among them several days. They sent, to the distance of ten and even fifteen leagues, invitations to their relatives and friends, to come and bear us company. The days and the nights passed away in dancing and festivity. In the towns the principal inhabitants entertained us by turns. Amid this hospitable conviviality we made the tour of the towns of poor Finland, Wiborg, Willmanstrand, Fredericsham, Nislot, and others. The castle of the latter is seated on a rock, at the discharge of the lake Kiemen, which surrounds it with two cataracts. From its platforms the eye perceives the vast extent of that lake. We dined in one of its four towers, in a small room illumined by windows resembling loop-holes. This very apartment was long the residence of the unfortunate Ivan, who was precipitated, at the age of two years and a half, from the throne of Russia. But this is not the place to expatiate on the influence which moral ideas are capable of diffusing over the scenery of Nature.

Plants are not, then, scattered at random over the earth; and though nothing has yet been said concerning their general arrangement in different climates, yet this simple sketch is sufficient to demonstrate that order pervades their combination. If we examine, in like manner, however superficially, their development, their attitude, and their magnitude, we shall perceive that there is as much harmony in the aggregation of their parts, as in that of their species. They cannot, by any means, be considered as the mechanical productions of cold and of heat, of drought and of humidity. Our scientific systems, have brought us back precisely to those opinions which plunged barbarous nations into idolatry, as if it were necessary that the end of our illumination should be the commencement and the return of our darkness; conformably to the censure of the author of the Book of Wisdom: *Aut ignem, aut spiritum, aut citatum aërem, aut gyrum stellarum, aut nimiam aquam, aut solum et lunam rectores orbis terrarum Deos putaverunt:*—"They deemed either fire, or wind, or the swift air, or the circle of the stars, or the violent water, or the lights of heaven to be the gods which govern the world."*

All these physical causes united could not have determined the port of one single moss. To convince ourselves of this, let us begin with examining the circulation of plants. It has been laid down as an irrefragable principle, that their sap ascends through the wood and re-descends through the bark. To the experiments adduced in evidence of this position, I shall oppose only the instance of a large chesnut-tree in the garden of the Tuileries, near the terrace of the Feuillans, which, for twenty years past has been stripped of bark all round its foot, and nevertheless continues in perfect vigor. Several elms on the Boulevards are in the same condition. On the other hand we see old, hollow willows, which have no wood at all remaining.

* Book of the Wisdom of Solomon, chap. xiii. v. 2.

Besides, how can this principle be applied to the vegetation of a multitude of plants, of which some are composed entirely of tubes, and others have no bark, but are enclosed only with dry pellicles.

Nor is there more truth in the supposition that they rise in a perpendicular line, and are determined to this direction by the action of the columns of air. This direction is indeed, followed by some, as the fir, the stalk of corn, the reed. But a much greater number deviate from it, as the creeping plants, the vine, the liane, the French-bean, and many more. Others ascend vertically, and having arrived at a certain height, fork off, without encountering any obstruction, into several stems, and shoot out their branches horizontally, as the apple-tree; or incline them toward the earth like the fir; or hollow them into the figure of a cup, like the sassafras; or round them into the form of a mushroom's head, like the pine; or contract them in that of an obelisk, like the poplar; or let them float at the discretion of the winds like the birch. All these attitudes may be observed under the same bearing of the wind Some even assume forms which all the art of the gardener could scarcely give them. Such is the *badamier* of India, which rises like a pyramid, and the *porte*, divided into stages like the king of a chess-board. There are plants extremely vigourous, which, far from pursuing the vertical line, deviate from it as soon as they get above the ground. Such is the yam of India that loves to creep on the sandy beach of hot countries, of which it covers whole acres. Such is likewise the *rotin* of China which frequently grows in similar situations. These plants do not creep from weakness. The scions of the rotin are so strong that the Chinese make cables of them for their ships, and when they are growing on the ground, they sometimes entrap the deer, which with all their exertions, are unable to disengage themselves. They are nets spread by the hand of Nature. I should never have done were I to notice here all the different ports of vegetables; what I have said will be

sufficient to demonstrate, that not one of them is directed by the vertical column of the air. Into this error philosophers have been led by the supposition, that they seek the greatest volume of air, and this error in physics has produced another in geometry; for, according to this hypothesis, they ought all to make towards the horizon, because the column of air is much more considerable there than at the zenith. We must, in like manner, reject the consequences which have been deduced from it, and laid down as principles of jurisprudence in the division of lands, in our boasted mathematical works, such as the following: "that no more wood or grass can grow on the sides of a mountain than would grow on the area of its base." There is not a wood-cutter or hay-maker who is not capable of demonstrating the contrary from experience.

The plants, it is said, are mechanical bodies. Try then to make a body so thin, so soft, so fragile, as that of a leaf, which, for whole years, resists the winds, the rains, the frosts, and the most intense heat. A spirit of life, independent of all latitudes, animates, preserves, and re-produces plants. They repair the injuries they sustain, and their wounds are covered with fresh bark. The pyramids of Egypt are mouldering into dust, but the grasses which clothed the soil at the time of the Pharoahs, subsist to this day. How many Greek and Roman sepulchres, the stones of which were rivetted with iron, have disappeared. Nothing remains around their ruins but the cypresses which shadowed them. It is the sun, we are told, which gives existence to vegetables, and perpetuates their existence. But this great agent of Nature, all-powerful as he is, cannot be the only and immediate cause of their development. If heat invites most of the plants, of our climates to expand their blossoms, it obliges others to shut them. Such are, among the latter, the nightshade of Peru, and the melancholy tree of the Moluccas which flower only in the night. Even his removal from our hemisphere does not destroy in it the power of Nature. In that season vegetate most

of the mosses that clothe the rocks with an emerald green; and the trunks of the trees are covered, in humid situations, with plants imperceptible to the eye, called *Musci* and *Lichen*, which in the midst of the snows give them the appearance of columns of green bronze. These vegetations in the severest cold of winter, overthrow all our reasonings on the universal effects of heat, as plants of an organization so delicate seem to require, for their development, the mildest temperature. The very fall of the leaves, which we have been taught to consider as an effect of the sun's absence, is not occasioned by the cold. If the palm retains its foliage all the year in the south, the fir likewise preserves its verdure in all seasons in the north. The birch, the larch, and several other species of trees, indeed, lose their leaves, in the north, at the commencement of winter: but other trees in the south are subject to similar depradations. It is the resinous substance, we are told, that preserves the foliage of the fir in the north; but the larch which is likewise a resinous tree, is stripped of its leaves; whereas the filaria, the ivy, the privet, and many other species destitute of that quality, preserve their verdure, with us, in all the seasons of the year. Without having recourse to these mechanical causes, the effects of which always contradict each other, when you attempt to generalize them, why should we not ascribe these varieties of vegetation to the uniform direction of a Providence? That Providence has planted in the south trees ever green, and has clothed them with broad leaves to shelter the animals from the heat. In another respect Nature has tenderly provided for the animals of hot climates, by covering them with robes of short, smooth hair, that they might be light and cool; and she has clothed the earth they inhabit with verdant ferns and lianes to protect them from the scorching sun. Nor has she forgotten the necessities of the animals of the north: she has spread over their heads canopies of ever-verdant firs, whose lofty and tufted pyramids ward off the snow from their feet, and whose branches are so

covered with long grey moss, that their trunks can scarcely be perceived. For a bed she has given them the moss which grows on the ground, and which, in many places, is more than a foot thick, and the soft, dry leaves of various kinds of trees, that fall precisely at the commencement of the inclement season; and, finally, for provision, the fruits of the same trees which have then arrived at perfect maturity. To these she has added the scarlet clusters of service-berries, which, sparkling from afar, amid the whiteness of the snows, invite the birds to repair to these asylums; so that the partridge, the moor-cock, the snow-bird, the hare, the squirrel, often find under the shelter of the same fir, lodging, food, and the means of warmth.

But one of the greatest blessings conferred by Providence on the animals of the north is, that it has clothed them with furred robes of long and thick hair, which grow precisely in winter, and fall off in summer. Naturalists, who consider the hair of animals as a species of vegetation, ascribe its growth to the influence of heat. They support their system by the example of the human beard and hair which grow very fast in summer. But I would ask them how it happens, that, in cold countries, the horses, which in summer have a smooth coat, are in winter covered with long woolly hair, like the fleece of a sheep? To this they reply, that the internal heat of the body, increased by the external action of the cold, produces this wonderful effect. Very well. But I might object that cold does not produce the same effect on the human hair and beard, since it retards their growth; that besides, in animals which Providence has provided with a particular clothing in winter, the hair is much the longest and thickest in those parts of the body that possess the least natural heat, such as the tail, which is very bushy in horses, martens, foxes and wolves; and that this hair is short and thin on parts where the heat is greatest, as on the belly. The back, the ears, and frequently their very paws are the parts most

abundantly provided with hair. I am, however, satisfied with advancing this last objection: the external and internal heat of an African lion ought, at least, to be equal to that of a Siberian wolf; why then has the former a smooth skin, whereas the other is shaggy up to the eyes?

Cold, which we consider as one of the greatest obstacles to vegetation, is as necessary to some plants as heat is to others. If those of the south cannot grow in the north, as little would those of the north thrive in the south. The Dutch have, in vain, attempted to raise at the Cape of Good Hope, firs for the masts of ships, which sell at a high price in India. Many inhabitants of the Isle of France have tried, with no better success, to naturalize in that island the lavender, the daisy, the violet, and other vegetable productions of our temperate climates. Alexander, who transplanted nations at his pleasure, could not make the ivy of Greece to grow in the vicinity of Babylon, though he was passionately desirous of acting, in India, the character of Bacchus, in complete style. I am, however, of opinion, that these vegetable transmigrations might be effected by employing ice-houses in the south for plants of the north, as in the north hot-houses are used to propagate the vegetables of the south. I do not believe, that there is a single spot on the face of the globe, where ice might not with a little industry be procured, as easily as salt. In the course of my travels I have no where met with a temperature so high as that of Malta, though I have twice passed the Line, and have resided in the Isle of France, where the sun is vertical twice a year. The soil of Malta is composed of hills of white stone, which reflect the rays of the sun with such force that the eyesight is sensibly affected; and when the wind from Africa, called Sirocco, which issues from the sands of Zara to melt the ices of the north, passes over the island, the air is as hot as the breath of an oven.* I recollect that, on these

* The pernicious influence of the Sirocco is attested by various travellers. "During the continuance of this wind," says the intel-

occasions, a figure of Neptune in bronze on the sea-shore was heated to such a degree, that you could scarcely bear to touch it with your hand. The snow of Mount Etna, which is sixty leagues distant, was, however, imported into the island; it was kept for months together in subterraneous vaults on straw, and though farmed out, it was sold at a farthing a pound. Since it is possible to have snow at Malta, in the dog-days, I think it might be procured in every country of the globe. Besides, Nature, as we have seen, has multiplied icy mountains, in the vicinity of hot countries. I may perhaps be reproached with indicating the means of promoting luxury; but since the lower classes now live only by the luxury of the rich, my suggestion may, at least, tend to the advancement of the science of Nature.

Cold is by no means the enemy of all plants, since it is only in the north that we meet with the loftiest and the

ligent author of the Present State of Sicily and Malta, all Nature appears to languish, vegetation withers and dies, the beasts of the field droop, the animal spirits seem too much exhausted to admit of the least bodily exertion, and the spring and elasticity of the air appear to be lost.—The sensation occasioned by the Sirocco wind is very striking and wonderful. In a moment, the air becomes heated to an excessive degree, and the whole atmosphere feels as if it was inflamed, the pores of the body seem at once opened and the fibres relaxed. During its continuance the inhabitants of Palermo shut their doors and windows to exclude the air, and where there are no window-shutters, wet blankets are hung on the inside of the window and the servants are kept continually employed in sprinkling the apartments with water. No creature whose necessities do not compel him to the exertion is to be seen while this tremendous wind continues to blow, and the streets and avenues of the city appear to be nearly deserted."

Notwithstanding these accounts of former travellers, a well-known writer, (Kotzebue) who recently made the tour of Italy, says, among his observations on the climate of Naples;—"The natives complain of the sea-breeze, called Sirocco, which, as they imagine, relaxes the system, and occasions indolence and indisposition. With me, however, the Sirocco agreed extremely well. Though its name was before so terrible, I am acquainted with it only as a warm delightful zephyr, which never produced in me any disagreeable sensation."—It should, however, be remarked, that the experience of this writer was confined to a few of the concluding months of the year, when the influence of this wind, supposing it to proceed from the heated sands of Zara, could not possibly be so powerful as in the midst of summer. T.

most extensive forests in the world. It is only at the foot of the everlasting snows of Mount Lebanon that the cedar, the monarch of vegetables, towers in all his majesty. The fir, which, after the cedar, is the greatest tree of our forests, attains to a prodigious height, only on the icy mountains and in the frozen climes of Norway and Russia. Pliny informs us, that the largest piece of timber which had ever been seen at Rome, up to his time, was a log of fir one hundred and twenty feet long, and two feet square at each end, which Tiberius had conveyed from the cold mountains of Voltolino in Piedmont, and which Nero employed in his amphitheatre. "You may judge," says he, "what must have been the whole length of the tree from which it was cut." However, as I imagine that Pliny means Roman feet, which are nearly of the same length as those of the Rhine, we must deduct from this statement nearly one twelfth. He likewise mentions the fir-mast of the vessel that conveyed from Egypt the obelisk erected by Caligula in the Vatican; this mast was four fathoms in circumference. I know not where it was procured. For my part, I have myself seen firs in Russia, in comparison to which those of our temperate climates are mere twigs. Among others, I observed two logs between Petersburg and Moscow, which exceeded in thickness the largest masts of our men-of-war, though they are composed of several pieces. They were cut from the same tree and served as gate-posts to the yard of a farmer. The boats which convey provisions from the lake of Ladoga to St. Petersburgh are not much smaller than those that ply between Rouen and Paris. They are built of deal planks which are two or three inches thick, sometimes two feet broad, and run the whole length of the vessel. The Russian carpenters of the districts where they are constructed, cut only a single plank out of one tree, timber being there so plentiful that they do not take the trouble to saw it. Before I had travelled in the regions of the north, I imagined, conformably to the laws of our physics, that the

earth must there be destitute of vegetation, on account of the severity of the cold. I was, however, greatly astonished, to find in those countries the largest trees I had ever seen in my life, and growing so near to each other, that a squirrel might traverse a great part of Russia, without touching the ground, by leaping from branch to branch. This forest of firs covers Finland, Ingria, Esthonia, the whole tract between Petersburg and Moscow, and thence extends over a considerable portion of Poland, where the oak begins to appear, as I myself remarked, when travelling through those countries. But what I have seen is only a very small part of these forests; for it is well known that they extend from Norway to Kamschatka, some sandy deserts excepted, and from Breslau to the shores of the Frozen Ocean.

I shall conclude this article with the refutation of an error noticed in the preceding Study, namely, that the cold has diminished in the north, in proportion as the forests have been cut down. As this position was advanced by some of our most distinguished writers, and was afterwards repeated, according to custom, by a multitude of others, it is of importance to overturn it, because it is extremely injurious to rural economy. I long adopted it myself on the faith of history, and it was not books, but peasants that convinced me of my mistake.

One day in summer, about the hour of two in the afternoon, being about to cross the forest of Ivry, I observed some shepherds with their flocks, who kept at a distance from it, reclining under the shade of the trees scattered over the country. I asked why they did not go into the forest, to shelter themselves and their flocks from the heat of the sun. They told me it was then too hot there, and that they never drove their sheep thither but in the morning and evening. Being desirous, however, of traversing in broad day, the forest in which Henry IV. had hunted, and of arriving betimes at Anet to view the country residence of Henry II. and the tomb of his mistress Diana de

Poitiers, I engaged a boy belonging to one of the shepherds to accompany me as a guide, which was a very easy matter to him, as the road to Anet crosses the forest in a straight line; and it is so little frequented, that I found it covered in many places with grass and strawberry-plants. I felt all the time I was walking, a suffocating heat, and much more intense than that experienced in the open country. I did not begin to breathe freely till I was quite clear of the forest and had proceeded more than three musket-shots from its skirts. In other respects, these shepherds, this solitude, the silence of the woods, mingled with the recollection of Henry IV. appeared to me much more sublime, than the emblems of the chace in bronze, and the cyphers of Henry II. entwined with the crescents of Diana, which surmount all the domes of the castle of Anet. This royal mansion, exhibiting the ancient trophies of love, at first inspired me with a profound emotion of pleasure and melancholy, which subsided into sorrow when I recollected that the passion was illicit; but this soon gave way to veneration and respect, when I was informed, that, by one of those revolutions to which the monuments of men are so liable, it was then inhabited by the virtuous Duke of Penthièvre.

I have since reflected on what the shepherds told me concerning the heat of the wood, and, on my own experience of the truth of their information; and I have, in fact, remarked, that in spring, all the plants are more forward in the vicinity of woods, and that violets are found in flower on their borders much earlier than in the open plain or on the naked hill. The forests, therefore protect the ground from the cold in the north; but, what is not a little wonderful, they shelter it from the heat in warm climates. These two opposite effects proceed only from the different forms and dispositions of their foliage. In the north the leaves of the pine, the larch, the fir, the cedar, the juniper, are slender, glossy, and varnished; from their smallness, their polish, and the variety of their directions

they reflect the heat around them in a thousand ways; producing nearly the same effect as the hair of the animals of the north, whose furs are warmer in proportion as their hair is more fine and glossy. Besides, the leaves of several species, as the fir and the birch, are suspended perpendicularly from their branches by long moveable stalks, so that with the least breath of wind, they reflect around them the rays of the sun, like mirrors. In the south, on the contrary, the palm, the talipot, the cocoa, the banana, bear large leaves, which on the side towards the ground, are, rather dull than glossy, and which, extending horizontally, throw a broad shade beneath them, without any reflection of heat. I admit, nevertheless, that the clearing away of forests dispels the cold arising from humidity, but it increases the dry and piercing cold of the north, as experience has proved on the lofty mountains of Norway, which were formerly cultivated, but are now uninhabitable, because they have been totally stripped of their woods. This clearing of the ground likewise increases the heat in warm countries, as I have observed in the Isle of France on several hills, which, since all the trees have been destroyed, are become so dry as to be at present incapable of cultivation. The grass which grows on them during the rainy season, is, in a short time, burned by the sun. What is still worse, in consequence of the aridity of these hills a great number of streams are dried up: for trees planted on eminences attract the humidity of the air, and fix it there, as we shall see in the Study that treats of Plants. Besides, by destroying the trees which are on high grounds, the vallies are deprived of their natural manures, and the plains of the skreens which shelter them from the high winds. These are in some places so destructive to cultivation, that nothing can be made to grow upon them. It is to this cause that I ascribe the sterility of the heaths of Brittany. In vain have attempts been made to restore them to their former fertility; they will never succeed, unless we begin with restoring to them their shelter

and their temperature, by re-planting their forests. But, first of all, it is necessary that the peasantry who cultivate them should be happy. The prosperity of a country depends, above all things, on that of its inhabitants.

STUDY VI.

REPLIES TO THE OBJECTIONS AGAINST PROVIDENCE FOUNDED ON THE DISORDERS OF THE ANIMAL KINGDOM.

We shall continue to treat of the fecundity of the northern regions, in order to destroy a prejudice, which ascribes the principle of life in plants and animals exclusively to the heat of the south. I could enlarge on the numerous chaces of elks, rein-deer, aquatic birds, heath-cocks, hares, white bears, wolves, foxes, martens, ermines, beavers, and other animals, in which the inhabitants of the northern countries are annually, engaged, and the very poultry of which, over and above what they employ for their own use, supplies them with a considerable branch of trade with all Europe. But I shall confine myself to their fisheries, because these gifts of the ocean are presented to all nations, and are no where so abundant as in the north.

The rivers and lakes of the north of Europe yield a prodigious multitude of fishes. John Schäffer, the accurate historian of Lapland informs us, that at Tornea are annually caught no less than thirteen hundred boat loads of salmon; that the pike there grow to such a size, that some of them are as long as a man, and that every year as many of them are salted as are sufficient for the consumption of the four kingdoms of the north. But these fisheries, however abundant, fall far short of those of its seas. In

their bosoms is caught the enormous whale, which is, in general, sixty feet in length, twenty in breadth over the body and the tail, eighteen feet in height, and which yields up to one hundred and thirty barrels of oil.* The fat is two feet thick, and to cut it off they are obliged to use knives six feet in length. From the seas of the north annually issue innumerable shoals which enrich the fishermen of all Europe; such as cod, anchovies, sturgeons, dories, mackarel, pilchards, herrings, seals, belugas, sea-calves, porpoises, sea-horses, whales, sea-unicorns, saw-fish, &c. All of them are there of a size much more considerable than in the temperate latitudes, and they are divided into a much greater number of species. Of the whale tribe there are reckoned twelve species; and in those seas are caught plaice weighing four hundred pounds. I shall confine myself to those fishes which are best known to us, such as herrings. It is an indisputable fact that the seas of the north annually send forth a quantity of that fish, more than sufficient to feed all the inhabitants of Europe.

We have memoirs which prove that the herring fishery was carried on as early as the year 1168 † in the streight

* The whales taken in the seas of Greenland and the north, are sometimes eighty or even ninety feet in length. The relations of early voyagers, it is true, assign to them a much greater magnitude, two hundred and two hundred and fifty feet; and Adamson says, that, in the torrid zone, where they are not molested, they attain the length of one hundred and fifty feet. From these circumstances the celebrated naturalist Dr. Bloch, considers it extremely probable, that the fishes of this species formerly grew to a larger size than at present, and that the destruction of such numbers within the two last centuries has prevented them from arriving at that enormous bulk, conferred by the peaceful possession of the ocean for so many preceding ages. T.

† To this innocent source of wealth attention was early paid in this country. Madox relates that in 1195 the town of Dunwich in Suffolk was obliged to deliver twenty-four thousand herrings to the king. In the 13th century the Icelanders carried on a great trade with this fish, and obtained a grant of the king of England for themselves and the Hollanders, securing to them the privilege of fishing on the coast near Yarmouth. At that place, a fair for herrings was established in the 14th century, where only, it was ordered by Edward III. in 1357 that the fishermen should sell their herrings. The Dutch

called the Sound, between the coasts of Schonen and Zeeland. Philip de Mésières, preceptor of Charles VI. relates in the *Dream of an aged Pilgrim*, that in 1389, in the months of September and October, the quantity of herrings in the Sound was so prodigious, that, "for the space of several leagues together," says he, "they might have been cut in pieces with a sword; and it is commonly reported, that there are forty thousand boats, which for two months are engaged only in the herring fishery, each boat containing six, and some not less than ten persons: besides these there are five hundred ships, great and small, employed wholly in collecting, salting and barrelling the herrings." He makes the number of hands, Prussians and Germans, engaged in this fishery, amount to three hundred thousand persons. In 1610 the Dutch, * who

who had before purchased herrings on the coasts of Scotch fishermen and supplied other nations with them, were, in consequence, obliged to send out vessels themselves to the fishery. T.

* No country carries on a commerce so considerable with herring as Holland. Mr. Carleson says that the fishery is a gold-mine to that nation; and it is a fact that the Dutch receive more money for this article than Spain from her mines of Peru and Mexico. At first, as we have already seen, the Dutch purchased herrings of the Scotch fishermen. Their industry and the judicious regulations that were adopted soon gave their herrings a decided preference, not only to the Scotch, but even to those of Flanders which were celebrated for their excellent quality. But nothing contributed so much to their success as the method of preserving them accidently discovered by William Beuckel of Biervliet, near Sluys, in Holland, from whose name is derived the term *pickle*, which we have borrowed of the Dutch. Beuckel died in 1397, and one hundred and fifty years afterwards, the emperor Charles V. to shew his regard for this benefactor of mankind, celebrated the invention by eating a herring on his grave. The fishery of the Dutch is not, however, so extensive as formerly. In 1416 the first large net was made at Hoorn and from that period the Dutch have sent out busses to the fishery. In 1566 the town of Enckhuysen alone employed one hundred and forty vessels in fishing for herrings, and in 1601 the whole republic sent out fifteen hundred busses for the same purpose. Since that time the commerce has decreased. In 1736 only two hundred and nineteen busses and thirty-one yachts were employed, and in 1773 the Dutch sent out no more than one hundred and sixty-nine busses. The fishery would have declined still more, had not the States of Holland, in 1775, offered a premium of five hundred florins for each buss that went out to fish for herrings. Notwithstanding its decrease, this fishery still continues to be a considerable branch of industry, and affords subsistence to ten thousand men. T.

carry on this fishery still farther to the north, where the herrings are better, employed in it three thousand boats and fifty thousand fishermen, exclusive of nine thousand other vessels engaged in barrelling and conveying them to Holland, and one hundred and fifty thousand persons, both at sea and on shore, occupied in carrying, preparing and selling them. At that period they derived from this fishery a revenue of two millions, six hundred and fifty nine thousand pounds sterling. I myself witnessed in 1762 at Amsterdam the joy of the people who suspend streamers and flags from the shops where this fish is sold, on its first arrival; these tokens of rejoicing may be seen in every street. I was there informed, that the company established for carrying on the herring-fishery was richer and employed a great number of hands than the East-India Company. The Danes, the Norwegians, the Swedes, the Hamburghers, the English, the Irish, and some merchants in the ports of France, as that of Dieppe, fit out vessels for this fishery, but in too small number for a manna so easily collected.*

* The Danes export to Germany not only the herrings which they take in spring and autumn on the northern coasts of Jutland and the islands of Ferro, but likewise send vessels to the coasts of Scotland. In 1707 a herring-fishery company was established at Altona, which at present employs fifty busses. A great quantity of smoked herrings is also sent from Holstein to Hamburgh and other towns.

The herring-fishery is one of the principal branches of national industry in Norway, and brings into that kingdom annually several tons of gold. The Norwegians make their casks of deal, which communicates to the herrings a taste that is not generally liked, but of which the Poles are extremely fond. The Danish government, a few years since ordered that the casks used for herrings should be made of oak, but a great decrease was soon observed in the sale. The Poles found that the herrings wanted the usual flavor and the Danish government was obliged to annul its command.

The Swedes, who formerly procured their herrings from other nations, have, within the last fifty years, paid more attention to the fishery and commerce with them. In 1746 a company was established for this fishery, which was encouraged by the government, and has brought its herrings into great repute, particularly those of Gothenborg. In 1764 that town sent to Hamburgh twenty vessels laden with herrings, which were thought to be equal in quality to those of Holland. From that place alone were exported in 1786, two hundred thousand tons of herrings and from twenty to twenty-two thousand

In the year 1782, at the mouth of Gotha, a small river which washes the walls of Gothenborg, one hundred and thirty-nine thousand tons were cured by salt, three thousand seven hundred tons by smoke, and two thousand eight hundred and forty-five tons of oil were extracted from such as were unfit for keeping. The Gazette of France which gives an account of this fishery, remarks, that previous to 1752, these fishes had not appeared in in those parts for 72 years. I ascribe their desertion of that coast to some naval engagement, which chased them away by the noise of the artillery, in the same manner as the turtle of the island of Ascension forsake the road for several weeks when the ships which pass it discharge their guns. Perhaps, likewise, some conflagration of the forests may have destroyed the vegetables which attracted them to the coast. The good bishop of Bergen, Pontoppidan, the Fenelon of Norway, who introduced into his sermons complete tracts of natural history, as excellent subjects for theology, relates, that when the herrings coast along the shores of Norway, "the whales which pursue them in great numbers, spouting up water into the air, give to the sea at a distance the appearance of being covered with smoking chimnies. The herrings to avoid their pursuit, keep close in shore, rushing into the bays and creeks, in which the water, before placid, forms considerable swells and surges wherever they crowd to escape. They throng to these situations in such numbers, that they may be taken by basketfuls, and the peasants even catch them by the

tons of oil. To make one ton of oil, from twenty to twenty-three tons of herrings are required. Some estimate of the importance to Sweden of herring-oil may be formed, when it is known that between the years 1760 and 1764 the value of the oil made in that country exceeded two millions of crowns.

In England and Scotland the trade in herrings is very great. The value of those exported annually from Glasgow alone is computed at twenty thousand pounds.

In 1770 a company was formed at Berlin for the herring fishery. In 1776 busses were sent from Embden to the coasts of Scotland; their number has been increased from year to year, so that now fifty busses annually leave that port. T

hand." All that are caught by these fishermen, form, however, a very small portion of that column which coasts along Germany, France, Spain, and advances as far as the Streights of Gibraltar, devoured, on the way, by an innumerable multitude of other fishes and sea-fowl, which pursue them night and day, till they are lost on the shores of Africa; or return, as others maintain, to the regions of the north.*

* It is an opinion generally received that, in winter the herrings retire to the Atlantic or Icy Ocean and that they depart thence on their migrations to the southern parts of Europe and to America. The following is the substance of the accounts of Pennant, Anderson, Duhamel and Bomare, relative to these migrations:——The herrings being frightened by the numerous enemies which pursue them, retire to the Atlantic Ocean, where those enemies cannot live beneath the ice for want of air. But as they multiply prodigiously in those regions, they are obliged by the scarcity of food to send off colonies at the beginning of every year. These after clearing the ice, extend in a vast body several hundred miles in breadth; but meeting with numerous enemies by the way, they are attacked, dispersed and separated into two divisions: that to the right sheering off to the west, and the other proceeding eastward. The former, in a close body, seek an asylum on the coast of Iceland, where they arrive about the month of March; then turning westward they arrive at the great bank of Newfoundland, after which it is not ascertained what becomes of them. The other division proceeds southward and forms two columns: one of these descends along the Norwegian coasts, through the Sound and the Belt into the Baltic; the other steers westward to the Orkney and Shetland islands. The latter column is subdivided into two brigades; one portion turning towards Ireland and Scotland, then makes the circuit of Ireland, enters the Atlantic, passes through the Channel and arrives on the coasts of the Netherlands. The other part, following the east coast of Scotland and England, passes into the North Sea, where the two columns unite. At length, after these vast shoals have fed the inhabitants of all the coasts bordering on the Baltic and German Ocean, the remainder assemble in the latter and again disappear. At last, as no traces of them are afterwards found on the European coasts, it is presumed that they return to their native deeps.

Our author is not singular in discrediting this ingenious hypothesis. That distinguished ichthyologist, Bloch, likewise ventures to call its accuracy in question. He demonstrates, in opposition to it, that the herring never, or at least very rarely appears on the coasts of Iceland, and that it is caught all the year round in the countries bordering on the Baltic Sea and German Ocean. He likewise asserts that it is impossible for this fish to make a circuit of several thousands of miles in such a short space of time, and asks: Why, if the herrings were frightened from the Arctic Ocean by the whales, they should go so many hundred miles after the danger has ceased; why they should return and again expose themselves to the persecutions of their formidable enemy; and how it happens that we can discover

For my part I no more believe that the herrings return to the seas whence they issued, than that fruits re-ascend the tree whence they dropped. Nature is so magnificent in the entertainments she provides for man, that she never sets the same dish before him a second time. I presume, conformably to an observation of father Lamberti, a missionary in Mingrelia, that these fishes accomplish the circuit of Europe by entering the Mediterranean, and that the boundary of their peregrinations is the extremity of the Black Sea. This appears the more probable, as the pilchards, which take their departure from the same regions, follow the same track, as is proved by the abundant fisheries of them carried on by the inhabitants of Provence, along their own coasts and those of Italy. "Multitudes of herrings," says father Lamberti, "are some seen in the Black Sea; in those years, the natives predict that the sturgeon-fishery will likewise be productive, and from the non-appearance of herrings they deduce a contrary opinion. In 1642 they were seen in such prodigious quantities, that, being thrown by the sea, on the beach between Trebisond and the country of the Abcasses, it was entirely covered with them, and was bordered with a bank of herrings at least three palms in height. The people of the country were apprehensive that the air would be infected by the corruption of these fishes; but they were soon followed by flocks of crows and ravens, which ate up the herrings and relieved them from their terror. The natives assert that a similar circumstance happened once before, only the quantity was inferior."*

no traces of their return? "But," he continues, "all these difficulties vanish, if we attentively observe Nature in all her operations. In common with other fishes, the herrings leave their usual abode in the spawning season, and repair to places that are more convenient for the purpose. Like them they quit the smooth bottom of the ocean to seek spots rendered rugged and uneven by the action of the currents, in order there to deposit their spawn. When the season approaches, it is this instinct, and not the dread of the whales, that impels them to seek those places. They spawn in different bodies, at

* Account of Mingrelia, in Thevenot's Collection

This prodigious number of herrings is certainly matter of astonishment, but this astonishment is increased, if we consider that this column is not the half of that which annually issues from the north. It separates at the northern extremity of Iceland, and while one division pours plenty on the coasts of Europe, the other proceeds to confer similar benefits on those of America. Herrings, as Anderson informs us, are in such abundance on the coasts of Iceland, that it is scarcely possible to row through them with a boat. They are accompanied by an immense multitude of pilchards and cod, which renders fish so common in this island, that the natives dry them, and reduce them to powder, bones and all, to serve as food for their oxen and horses. Father Rale, a Jesuit, and a missionary in America, speaking of the savages between Acadia and New England, says: "They resort at a certain season to a river not far distant, where for a month the fish ascend in such quantities, that fifty thousand barrels might be filled in a day, if there were hands sufficient for the labour. They are a species of large herring, very agreeable to the taste when they are fresh. They crowd together in shoals a foot thick, and are taken up like water. The savages dry them for eight or ten days, and subsist upon them during the whole seed-time." * This testimony is con-

three different times, and usually according to their age. Besides this, as the season for spawning happens later or earlier, according to the temperature of the water and of the air, it is easy to account for the appearance of the herring at different times. For example, in the Baltic and on the Norwegian coasts there appears in the spring a small kind of herring that has just spawned, in summer a larger kind succeeds, which in autumn is followed by a smaller species just ready to spawn. It is ascertained that the fishes of seas and lakes, which pass in spring into the rivers, do not return till autumn to their usual places of abode. The same is doubtless the case with herrings, and this is the cause of their dispersion in winter. It is likewise possible that the herring, which is a small sea-fish, may spawn more than once a year, like several of the small species of river-fish. Nature employs various means for attaining the same end: thus, as the small fishes often become the prey of the larger kinds, it is necessary that the former should multiply much faster than the latter: and this end is answered by their more frequent

* Instructive Letters, vol. xxiii. p. 199.

firmed by many others, and particularly by a native of America, of English extraction, who has written a history of Virginia. "In the spring of the year," says he, "herrings come up in such abundance into their brooks and fords, to spawn, that it is almost impossible to ride through without treading on them.—Thence it is, that at this time of the year, the freshes of the rivers stink of fish. Besides these herrings there come up likewise into the freshes from the sea, multitudes of shads, rocks, sturgeon, and some few lampreys."

It appears that another column of these fishes issues from the north pole to the east of our continent and passes through the channel which separates America from Asia; for we are informed by a missionary, that the inhabitants of the land of Yesso, carry among other dried fish likewise herrings for sale, to Japan. The Spaniards, who have attempted to make discoveries to the north of California, have found that all the nations of those regions subsisted upon fish, without applying themselves to any kind of cultivation. Though their visits were confined to the middle of summer, probably before the fishing season had commenced, yet they always found a prodigious abundance of pilchards, which are natives of the same regions, and migrate like the herrings; for vast quantities of small ones are taken at Archangel. I have eaten them in Russia, at the table of Marshal Count Munich, who called them the anchovies of the north. But as the northern seas which separate Asia from America are unknown to us, I shall follow this fish no farther. I shall only observe that more than half of these herrings are filled with eggs, and if all of them were to arrive at maturity, for three or

re-production. The same observation has been made respecting small birds and several other species of animals. This prodigious multiplication has induced some writers to imagine that this fish breeds beneath the ice of the Arctic Ocean. But when we reflect on the immense space assigned to the herring for its abode, we shall not be surprised at the prodigious quantities of these animals and their extraordinary multiplication, which makes good the immense quantities that are daily consumed." T.

four generations only, the ocean itself would be incapable of containing them. The herring, apparently produces as many eggs as the carp. Mr. Petit a celebrated physician and anatomist found that the two parcels of eggs in a carp eighteen inches long, weighed eight ounces two drams or four thousand seven hundred and fifty grains, and that the weight of seventy two of those eggs was equal to a grain, which gives a product of three hundred forty two thousand, one hundred and forty four eggs contained in the roe of one fish.* I have been somewhat diffuse on the subject of this fish, not with a view to promote our commerce, which by its offices, its privileges, its exclusions makes every thing scarce with which it intermeddles; but to point out a resource to the lower classes of the people, reduced in many places to subsist entirely on bread, while Providence bestows on Europe, with such a liberal hand, the most delicate of fishes, perhaps, that swims in the sea.† We must not form a judgment from those which are brought to Paris, after the season is over, and which are caught at a little distance from our coasts, but from those caught in the north, and known in Holland by the name of *pickled herrings*, which are thick, long, fat, with the flavor of a nut, so delicate and so juicy that they cannot be dressed, but are eaten raw and pickled like anchovies.

The south pole is not less productive of fishes than the north. The nations nearest to it, as the inhabitants of the islands of Georgia, New Zealand, Terra del Fuego and the countries contiguous to the streights of Le Maire and Magellan, subsist entirely upon fish and are strangers to

* A carp presented to Dr. Bloch by M. von Schlegel weighed nineteen pounds and its eggs one pound fourteen ounces. He found that the weight of a dram contained 1295 eggs, so that the whole roe could not consist of less than 625,600. T.

† More than one epicure has already made this observation; but here is another to which few people pay any attention, that in all cases and in all countries, the most common things are the best.

every species of agriculture. Sir John Narborough, a navigator of unimpeached veracity, says, in his journal of a voyage to the South Sea, that port Desire, situate in latitude 47 deg. 48 min. south, is so filled with penguins, sea-calves, and sea-lions, that any vessel touching there would find provisions in abundance. All these animals, which are very fat, live on nothing but fish. When he was in the streights of Magellan, he took at a single haul of the net five hundred large fishes, resembling the mullet, as long as a man's leg, smelts twenty inches in length, a great quantity of fish like the anchovy; in a word, they found so many of every species, that they ate nothing else during their stay in those parts. The muscles, with beautiful mother-of-pearl shells, known in our cabinets by the name of Magellan muscles, are there of a prodigious size and excellent eating. The limpet, in like manner, is there very large. There must be on those shores says he, an infinite number of fishes to support the sea-calves, the penguins, and other birds, that live entirely upon fish, and are all equally fat, though their number is incalculable. His crew one day killed four hundred sea-lions in the space of half an hour. Some of them were eighteen feet long. Those which are only fourteen swarm in thousands. Their flesh is as delicate and as white as lamb, and excellent eating when fresh, but still better after it has been some time in salt. I shall here observe, that none but the fishes of cold climates take salt well, and retain, in that state, part of their flavor. It seems as if Nature intended, by this medium, to communicate to all the nations of the globe, a portion of that abundance which issues from the frigid zones.

The west coast of America, in the same latitude, is not less abundantly supplied with fish. "Along the whole sea-coast," says the Peruvian Garcilasso de la Vega,* "from Arequipa to Tarapaca, a tract above two hundred leagues

* History of the Incas, book V. chap. 3.

in length, they employ no other manure for the land, than the dung of certain birds called sea-sparrows, of which there are flocks so numerous, that it is impossible to behold them without astonishment. They frequent the desert islands on the coast, and by the accumulation of their ordure, they whiten them in such a manner, that, at a distance, they might be taken for mountains covered with snow. The Incas reserved these islands to dispose of them in favor of any province they pleased." Now this dung proceeded from the fishes on which these birds subsisted. "In other parts of the same coast," says he, "in the countries of Atica, Atitipa, Villacori, Malla and Chilca, the land is manured with the heads of pilchards, which are put into the ground, at a small distance from each other, after two or three grains of maize have been dropped into each. At a certain season of the year, the sea throws upon the shore such quantities of live pilchards, that the natives have sufficient both for food and for manure, so that if they were to collect them all, they might load whole ships with the surplus."

Thus we see that the coast of Peru is nearly the boundary of the emigration of the pilchards, which issue from the south pole, as the shores of the Black Sea are the limits of that of the herrings, which proceed from the north pole. The routes of the pilchards of the south, and of the herrings of the north, are nearly of the same length, and their destinies, are, in the end, alike. It would appear as if certain Nereids were commissioned, to conduct annually, from the poles, those innumerable shoals of fishes, to furnish subsistence to the inhabitants of the temperate zones; and that when they have arrived at the termination of their course, in the hot climates where fruits abound, they empty upon the shore what remains in their nets.

It will not be so easy, I confess, to refer to the beneficence of Nature the wars which animals wage with each other. Why should carnivorous animals exist? If I am

not capable of resolving this difficulty, Nature must not be accused of cruelty, because I am deficient in knowledge. She has arranged what we know with so much wisdom, that we cannot but give her credit for the same intelligence, in that portion of her works with which we are unacquainted. I shall, however, venture to state my opinion and to offer a reply to the question, particularly as it will furnish me with an opportunity of presenting some observations which I consider as new and worthy of attention.

In the first place beasts of prey are necessary. What would become of the carcases of so many animals that perish in the waters and on the earth, which they would poison with their infection? Several species of carniverous beasts, it is true, devour living animals. But who can tell whether they do not transgress the laws of Nature? Man knows very little of his own history: how then can he be acquainted with that of beasts? Captain Cook observed in a desert island in the southern ocean, that the sea-lions, sea-calves, white bears, eagles, and vultures, lived peaceably together, and that none of those tribes attempted to molest the other. I have myself observed the same harmony between the boobies and man-of-war birds of the island of Ascension. But, in fact, they ought not to be complimented too highly on their moderation. It was an association of plunderers. They agreed to live peaceably together at the expence of the fishes which they swallowed alive.

Let us revert to the great principle of Nature. She has made nothing in vain. She destines few animals to die of old age, and it is my opinion, that she permits man alone to complete the career of life, because he is the only one whose old age can be of utility to his fellow-creatures. Of what service would be, among the brute creation, aged animals destitute of reflection, to progeny endued at their birth with all their experience? On the other hand what assistance would decrepid parents receive from children, who

abandon them as soon as they have learned to swim, to fly, to walk? To them old age would be a burthen, from which they are delivered by the beasts of prey. Besides, from their unobstructed propagation would arise a posterity without end, which the globe would not be capable of supporting. The preservation of individuals would involve the destruction of species.* The animals might continue to live, I shall be told, in a proportion adapted to the places they inhabit. But in this case they must cease to multiply, and then farewell the loves, the nests, the alliances, the

* "Super-fecundity," says a late popular English writer, "though of great occasional use and importance, exceeds the ordinary capacity of Nature to receive or support its progeny. All super-abundance supposes destruction, or must destroy itself. Perhaps there is no species of terrestrial animals whatever, which would not over-run the earth, if it were permitted to multiply in perfect safety; or of fish which would not fill the ocean; at least, if any single species were left to their natural increase without disturbance or restraint, the food of other species would be exhausted by their maintenance. It is necessary therefore that the effects of such prolific faculties be curtailed. In conjunction with other checks and limits, all subservient to the same purposes, are the thinnings which take place among animals by their action upon one another. In some instances, we ourselves experience very directly the use of these hostilities. One species of insect rids us of another species, or reduces their ranks. A third species, perhaps, keeps the second within bounds: and birds or lizards are a fence against the inordinate increase by which even these last might infest us. In other more numerous and possibly more important instances, this disposition of things although less necessary or useful to us, may be useful or necessary to certain other species, or even for the preventing of the loss of certain species from the universe, a misfortune which seems to be studiously guarded against. Though there may be the appearance of failure in some of the details of Nature's works, in her great purposes there never is. Her species never fail. The provision which was originally made for continuing the replenishment of the world, has proved itself to be effectual for a long succession of ages.

"What further shews that the system of destruction among animals holds an express relation to the system of fecundity; that they are parts indeed of one compensatory scheme, is, that in each species the fecundity bears a proportion to the smallness of the animal, to the weakness, to the shortness of its natural term of life, and to the dangers and enemies by which it is surrounded. An elephant produces but one calf: a butterfly lays six hundred eggs. Birds of prey seldom produce more than two eggs; the sparrow tribe and the duck tribe frequently sit upon a dozen. In the rivers we meet with a thousand minnows for one pike: in the sea a million of herrings for a single shark. Compensation obtains throughout. Defencelessness and devastation are repaired by fecundity." *Paley's Natural Theology*, p. 421 T.

fore-sight, and all the harmonies which reign among them. All that is born is doomed to die. But Nature, in devoting them to death, takes from them all that can render the moment of it painful. It is usually in the night, and in the midst of sleep, that they expire under the fangs and the teeth of their enemies. Twenty wounds inflicted at once on the sources of life, afford no leisure to reflect that they are about to lose it. That fatal moment is not embittered by those sentiments which render it so painful to most of mankind, regret for the past and solicitude about the future. Strangers to care, their spirits fly into the shades of night, amid a life of innocence, and frequently during the indulgence of the illusions of love.

Compensations to us unknown, may, perhaps, farther sweeten this last transition. I shall, at least, observe as a circumstance worthy of the most attentive consideration, that those species of animals whose lives are sacrificed to the support of others, such as the class of insects, appear to be utterly destitute of sensibility. Pull off the leg of a fly, and it will walk to and fro as if it had sustained no loss; the privation of a limb so important is attended neither with fainting nor convulsion, nor outcry, nor any symptom of pain. Cruel children amuse themselves with thrusting long straws into the anus; they rise into the air thus impaled, walk, and perform all their ordinary movements without seeming to mind it. Others take cockchafers, tear off a large limb, run a strong pin through the nerves and cartilages of the thigh, and fasten them with a slip of paper to a stick. The senseless insects fly humming round and round the stick without ceasing, and without appearing to suffer the least pain. Reaumur one day cut off the flesh and muscular horn of a large caterpillar, which continued eating as though nothing had happened. Can it be supposed that creatures so tranquil in the hands of children and of philosophers, feel any sense of pain when gobbled down by the birds of the air?

I might extend these observations still farther, and shew

that fishes of those classes which have neither bones nor blood, and these form much the greatest number of the inhabitants of the seas, appear equally destitute of feeling I have seen between the tropics a tunny, from whose shoulders one of our sailors scooped away a slice of flesh with a harpoon, follow our ship for several weeks without being outdone by any of its companions in speed or in playfulness. I have seen sharks, wounded with musket-balls, return to bite again at the hook, from which they had just escaped with mangled jaws. We shall, besides, discover a much greater analogy, between fishes and insects, if we consider that neither have bones or blood; that their flesh is impregnated with a viscous fluid, and which likewise appears to be the same in both, as it emits the same odor when burned; that they do not respire at the mouth but at the sides, insects by the trachea and fishes by the gills; that they have no auditory organ, but hear by means of the vibration, communicated to their bodies by the fluid element in which they live; that, from the situation of their eyes, they see all round the horrizon; that they hasten alike to the light; that they shew the same avidity, and are, in general, carnivorous; that in both genera the female is larger than the male; that they produce an infinite number of eggs without hatching them; that most fishes pass at their birth through the state of insects, issuing from their eggs in the form of worms, and some even in that of frogs, as a species of fish in Surinam; that both are cased in scales; that most fishes have beards and antennæ like insects; that both the one and the other comprehend, in their ranks, an infinite variety of forms peculiar to themselves; finally, that their constitutions, their manners, their metamorphoses, their fecundity being the same, we are tempted to ascribe to these two grand classes the same insensibility

As to the animals which have blood, let Mallebranche say what he pleases, they are endued with feeling. They manifest a sense of pain in the same manner as ourselves.

But Nature has furnished them with thick hides, with long hair, with plumage, which protect them from external blows. Besides, they are scarcely exposed to any ill usage excepting from the hands of cruel men.

Let us now proceed to the generation of animals. We have seen that the largest and the most numerous species of the globe, are produced in the north without the assistance of the solar heat. Let us see whether fermentation possesses a more prolific power in the south. The Egyptians informed Herodotus, that certain species of animals were generated by the fermented mud of the ocean and of the Nile. Whatever respect I entertain for the ancients, I deny their authority in subjects relative to physics. Most of their philosophers had a close resemblance to those of modern times. They observed little and reasoned much. If some, to pacify the minds of voluptuous princes, advanced, that every thing proceeded from corruption, and returned to it again, others refuted them even at that period. Not only did corruption never produce any living body, but it is fatal to them, especially to those that have blood, and in particular to man. No air is unwholesome but where there is corruption. How could it have engendered in animals feet provided with toes, nails, and claws; skins covered with so many kinds of hair and plumage; jaws palisaded with teeth adapted some to cutting and others to grinding; heads adorned with eyes, and eyes furnished with eye-lids to defend them from the sun? How could it have collected those scattered members; how could it unite them by nerves and muscles; support them with bones fitted with pivots and with hinges; feed them with veins full of blood which circulates, whether the animal be in motion or at rest; cover them with skins, the furry hair of which is so admirably adapted to the climates they inhabit; afterwards communicate to them the power of motion by the combined action of a heart and a brain, and give to all these machines, generated in the same place, formed of the same slime,

appetites and instincts widely different? How could it have inspired them with a sense of what they were, and kindled in them a desire of propagating their species by any other method than that which had given themselves existence? Corruption so far from conferring life, must have deprived them of it; for it produces tumors, inflames the eyes, dissolves the blood, and produces an infinite number of diseases in most of the animals which inhale its emanations.* The fermentation of any substance what-

* Of all corruptions that of human flesh is most dangerous. Of this a very extraordinary instance is related by Garcilasso de la Vega, in his History of the civil wars of the Spaniards in the Indies, vol. I. part 2. chap. 42. He first observes, that the Indians of the islands of Barlovento poison their arrows by thrusting the points into dead bodies, and then adds: "I shall relate a circumstance that occurred with one of the quarters of the body of Carjaval, exposed on the road to Collasuyu, situated to the south of Cusco, and to which I was myself an eye-witness. We set out for a walk, one Sunday, ten or twelve school-fellows, all *mestizos*, that is, the children of Spaniards by Indian women, the eldest being under twelve years of age. Perceiving in the fields one of the quarters of Carjaval, we took a fancy to go to look at it; and having approached we found that it was one of the thighs, the fat of which had dropped upon the ground. The flesh was greenish and entirely corrupted. While we were surveying this melancholy spectacle, one of the boldest among us chanced to say: "I would lay a wager that no one here ventures to touch it." Another replied he would. At last the most courageous of all, whose name was Bartholomew Monedero, thinking to perform an act of boldness, thrust the thumb of his right hand into the putrid limb, in which he buried it entirely. This action surprised us all so much, that we ran away from him, for fear of infection, calling out to him: "O wicked wretch! Carjaval will make you pay for your rashness!" He, however, went immediately to a brook, which was close to the spot, where he washed his hand several times, and rubbed it with mud, after which he returned home. Next day he came to school, where he shewed his thumb, which was prodigiously swelled; but in the evening his whole hand was inflamed up to the wrist. The following day which was Tuesday, the arm was swelled up to the elbow, so that he was under the necessity of telling the cause to his father. Professional men were immediately called in, who tightly bandaged the arm above the swelling, and applied every remedy which appeared likely to operate as a counter-poison. It, nevertheless, nearly cost the patient his life; it was with great difficulty that he was restored, after being four whole months incapable, from weakness, of holding a pen."

From this circumstance we may conclude, how dangerous the putrid emanations of our church-yards must be to the inhabitants of cities. Parish churches, in which so many corpses are interred, are filled especially in spring, when the earth begins to grow warm, with an air so corrupted, that I consider them as one the principal sources of the small-pox and the putrid fevers prevalent at that season. A

ever is incapable of forming an animal, or even the egg from which it issued. We find in the lay-stalls of our great cities, where so many substances ferment together, organic particles of every species, entire bodies of animals, blood, plants, salts, oils, phlegm, spirits, minerals, substances more heterogeneous and more compounded by the caprice of man in a state of society than those blended and accumulated by the waves of the ocean on its shores yet never even there was a single organized body discovered. Let it not be asserted that the heat necessary for their development is there wanting; it exists, of every degree, from the temperature of ice to that of fire. Salts are there crystallized and sulphurs formed. In Paris itself was some years since collected sulphur formed by Nature in the ancient lay-stalls of the times of Charles IX. We see, every day, that fermentation may be excited to such a degree in dung as to catch fire. Its moderate heat is even so favorable to the expansion of germs that it is employed for hatching chickens. But the combinations of all these substances never produce any thing living or organized. What do I say? The first operations of Nature, which we attempt to explain, are enveloped in so many mysteries, that an egg with an aperture ever so small loses its prolific power. The slightest contact with the external air is sufficient to destroy the first rudiments of life. It is not, therefore, either matter, or degrees of heat which are wanting to man, to imitate Nature in the pretended

disgusting smell issues from them, which makes the stomach rise. I have met with it in particular in some of the principal churches of Paris. This smell is very different from that produced by a crowd of living people, for nothing of the kind is perceived in the churches of convents where only few are interred.

It would be worthy of the curiosity of anatomists to examine why the putrefaction of bodies, destroys the animal economy of most beings, and why it makes no derangement in that of carnivorous animals. Many species of insects and of fishes feed on carrion. I remark that most of these animals have no blood, which is the first fluid affected by corruption, and that the apertures through which they breathe, are not the same as those at which they take their food. These reasons, it must be allowed, are inapplicable to vultures, crows, &c.

creation of beings: and this principle, ever young and active, has not weakened itself, since it still possesses the power of reproducing them, which is at least, equal to that of conferring existence.

The wisdom with which she has regulated their proportions is not less worthy of admiration. If we examine the animals, we shall find none of them defective in its members, if we take into consideration its manners and the places it is destined to inhabit. The long, thick bill of the toucan, and his tongue formed like a feather, were necessary to a bird who seeks the insects scattered among the humid sands of the shores of America. It was needful that he should be provided with a long mattock to turn them up, a large spoon to collect his food, and a tongue fringed with delicate nerves to be able to feel it. Long legs and a long neck were necessary to the heron, the crane, the flamingo and other birds which frequent marshy situations and seek their prey at the bottom of the water. Every animal has feet and a mouth, or a bill, adapted to the soil it has to tread, and the food on which it is to subsist. It is from the configurations of these, that naturalists deduce the characters which distinguish beasts of prey from such as live on vegetable substances. These organs have never been wanting to the necessities of animals, and they are even indelible as their instincts. I have seen, in the country, ducks, bred for several generations at a distance from water, and which, nevertheless, retained on their feet the broad membranes of their species; and on the approach of rain, clapped their wings, screamed, called upon the clouds, and seemed to complain to heaven of the injustice of man, who deprived them of their element. No animal wants one necessary member, or has received one that is superfluous. Some philosophers have considered the spurs, appended to the legs of a hog as useless, because they do not bear upon the ground; but that animal being destined in marshy places, where he delights to wallow and to turn up the mire with his snout to a considerable

depth, would from his gluttony, frequently sink in it, had not Nature placed at his heels two projecting spurs, which assist him to extricate himself again. The ox, which frequents the swampy banks of rivers, has appendages of nearly the same description. The hippopotamus, which lives in the waters on the shores of the Nile, has a cloven foot, and above the pastern, two small horny substances which touch the earth when he walks, so that he leaves on the ground an impression which might be mistaken for that of four claws. The description of this amphibious animal may be found at the end of Dampier's Voyages.

How could enlightened men misunderstand the use of these accessory members, whose form is imitated by the peasants of some of our provinces in the stilts, which on account of this very resemblance, they denominate *pig's feet* and which they employ in crossing marshy places? These clowns have likewise imitated that of the pointed and divergent spurs of the foot of the goat, which assist them in climbing the rocks, in the poles furnished with two iron spikes, contrived to prevent the backward motion of their loaded carts on the declivities of hills. Nature who varies her means with the obstacles to be surmounted, has bestowed the appendage of spurs on the heels of the hog, for the same reason that she has clothed the rhinoceros with a hide plaited with several folds, in the midst of the torrid zone. This clumsy animal appears to be covered with a threefold mantle; but being destined to live in the miry swamps of India, where he grubs up with the horn at his snout the long roots of the bamboo, he would sink in them, from his enormous weight, did he not possess the singular faculty of expanding, by inflation, the numerous folds of his skin, and of rendering himself lighter, by occupying a larger space. What at first sight appears to be a defect in animals, is, we may be assured, a wonderful compensation of Providence; and it would in many cases, be an exception from the geneal laws of Nature, if she had any other than the utility and the happiness of her creatures.

Hence she has given to the elephant a trunk which serves him for a hand, in climbing the rugged mountains where he delights to live, and in picking up the grass of the fields and the foliage of the trees, which the thickness of his neck would prevent him from reaching.

She has infinitely varied among the animals the means of defence, as well as those of subsistence. It cannot be supposed that those which move slowly, or which utter loud cries are in a state of habitual suffering; for how could races of sickly creatures perpetuate themselves and become the most extensively diffused on the face of the globe? The sluggard, or sloth, is found in Asia, in Africa and in America. His tardiness is no more a paralytic affection than the slowness of the tortoise or of the snail: the cries which he utters when you approach him are not the cries of pain. But as some animals are destined to roam over the earth and others to remain stationary at their posts, their means of defence are varied according to their manners. Some escape their enemies by flight; others repel them by hissings, by hideous figures, by infectious smells, or by lamentable cries. Some elude their sight, as the snail, which is of the color of the walls or of the bark of the trees where it seeks a retreat; others by a magic altogether inconceivable, assume, at pleasure, the color of the objects that surround them, as the cameleon. O how sterile is the imagination of man in comparison to the intelligence of Nature! He has produced no one thing, in any line whatever, of which he has not taken the model from her works. Genius itself, about which so much noise is made, creative genius, which our wits imagine that they have brought with them into the world, and have perfected in the circles of the learned and with the aid of books, is nothing more than the art of observing. Man cannot deviate from the paths of Nature, even when he is determined. He is wise only in her wisdom, he is foolish only when he deranges her plans. All the frightful demons produced by the graver of Callot, so prolific of monsters, are composed

only of the ill assorted members of different animals, the beak of the owl, the jaws of the crocodile, the body of the horse, the wings of the bat, with the claws and the spurs which he has added to the human figure to render the contrast more hideous. Females, too, who, more agreeably capricious, amuse themselves with embroidering fancy-flowers on the various articles of their dress, are obliged to borrow their models from our gardens. Examine on their dress the sportive productions of their imaginations; you will observe carnations sprouting from the foliage of the myrtle, roses engrafted on rushes, and pomegranates on blades of grass. Nature alone produces none but rational harmonies, and combines, both in animals and in plants, only such parts as are adapted to the places, to the air, to the elements, and to the uses for which they are designed. Never was a race of monsters known to issue from her sublime conceptions.

I have often heard living monsters announced at our fairs, but I never had the fortune to see a single one, notwithstanding all the trouble I have taken for that purpose. One day a hand-bill was circulated during the fair of Saint Ovide concerning a cow with three eyes and a sheep with six legs. I was curious to see those animals, and to examine what use they made of organs and members which to me appeared entirely superfluous. Why, said I to myself, should Nature have furnished the body of a sheep with six legs, when four are sufficient to support it? I recollected, however, that the fly, which is much lighter than the sheep, has six; and this reflection, I confess, embarrassed me. But, having one day observed a fly which settled on my paper, I remarked that she was extremely busy in brushing alternately her head and her wings first with the two fore-feet and then with the two hinder ones. I was then clearly convinced that she had occasion for six feet, that she might have the support of four, when engaged in brushing herself with the other two, especially on a perpendicular plane. Having caught and examined her

with the microscope, I perceived with admiration that the two feet in the middle had no brushes, but that the other four had. I farther remarked that her body was covered with particles of dust, which adhere to it in the atmosphere as she flies, and that her brushes were double, furnished with fine hairs, between which she projected and drew back, at pleasure, two claws resembling those of a cat, but incomparably sharper. The claws enable the fly to hold fast by polished substances, as glass, on which she is seen to ascend and descend without slipping. I was very curious to see how Nature had attached two new legs to the body of a sheep, and how she had formed, to put them in motion, new veins, new nerves, and new muscles with their insertions. The third eye of the cow perplexed me still more. I, therefore, went, like other simpletons, and paid my money to gratify my curiosity. I saw crowds of people coming out of the repository of those animals, highly astonished at the sight. At length I too enjoyed the satisfaction of beholding those wonders. The two superfluous legs of the sheep were nothing more than two shrivelled pieces of skin, resembling thongs, suspended from the body, without touching the ground, or being of any use whatever to the animal. The pretended third eye of the cow was an oval orifice, in the middle of the forehead, without orbit, without pupil, without a lid, or any membrane resembling one single organized part of an eye. I returned, without examining whether these accidents were natural or artificial; for, in fact, it was not worth the trouble. The monsters which are preserved in spirits of wine, such as young pigs with the trunks of elephants, children joined together, or with two heads, which are shewn in our cabinets, with philosophic mysteriousness, prove much less a designed production of Nature, than an interruption of her laws. None of these beings attained a complete expansion: and so far from demonstrating a digression on the part of the intelligence which produced them, they attest, on the contrary, the immutability of supreme wisdom, which excluded them from its plan by refusing them life.

In the conduct of nature towards man there is a benignity which demands our admiration; for though she prevents him, on the one hand, from altering the regular course of her laws to satisfy his caprices; yet, on the other hand, she often permits him to derange it, in order to supply his necessities. For instance, from the copulation of the ass and the mare she produces the mule, which is so serviceable in mountainous countries; but she deprives that animal of the power of re-production, in order to preserve the primitive species, which are of more general utility. In most of her works may be perceived these maternal condescensions, and, if I may so express myself, these royal provisions. They manifest themselves particularly in the productions of our gardens. We find them in those of our flowers which have a super-abundance of corollæ, as in the double rose, which is not re-produced from seed, and which for this reason some botanists have dared to denominate a monster, though, in the opinion of all nations, it is the most beautiful of flowers. Naturalists have imagined, that it deviated from the laws of Nature, because it formed an exception to their systems, as if the first of the laws which govern the world, had not for its object the happiness of man. But if roses, and those flowers which have a super-abundance of corollæ are monsters, the fruits which have a super-abundance of pulpy flesh, and of saccharine paste of no use toward the perfection of their seeds, as apples, pears, melons, and fruits which have no seed at all, as pine-apples, bananas, bread-fruit must likewise be monsters. The roots which attain to such a size in our gardens, and which are converted into large pivots, into succulent glands and into farinaceous bulbs, unserviceable to the expansion of their stems, are also monsters. Nature has destined this vegetable super-abundance for the sole nourishment of a portion of mankind; she bestows it only as the reward of industry. Let the soil be ever so fertile, the vegetables of the same species with those in our gardens there grow wild, and spend themselves in foliage and

in branches. If they bear any fruit, the flesh is always scanty and the seed or the stone very large. Is it not, then, an instance of real complaisance on the part of Nature, that she should transform into nourishment, under the hand of man, the same juices which, in the forest, would be converted into lofty stems and strong roots? Without her condescension in vain would man say to the sap of trees: "You shall flow into the fruits and proceed no farther." In vain, even in the most fertile soil, would he cut and prune and engraft: the almond-tree would still refuse to cover its nut with a fleshy, melting pulp like that of the peach. It is Nature that, from time to time, presents to man the useful and agreeable varieties which she produces from the same genus. All our fruit-trees were originally natives of the forests, and none of them there perpetuates itself in its species. The pear called the Saint Germain, was found in the forest of that name with its well-known flavor. Nature selected it, like the other fruits of our orchards, from the table of the animals, to place it on that of man; and that we might not doubt her beneficence and its origin, she has ordained that its seeds should re-produce only crabs. Ah! if she were to suspend the particular laws of her beneficence in the grounds of our miscreants, and to establish there her supposed general laws, what would be their astonishment to find in their kitchen-gardens and in their orchards, nothing but miserable dwarf-plants, small wild roses, harsh pears and acid fruits, such as she produces in the mountains for the coarse palate of the wild boar. They would, indeed, find stems of trees lofty and vigorous. The growth of their orchards would be doubled, and their fruits would be diminished one half.

The same metamorphosis would take place in the animals of their farm-yards. The hen whose eggs are much too large in proportion to her size, and which continues laying for nine months successively, contrary to all the laws of incubation among birds, would then return to the general

order, and would produce, at the farthest, twenty eggs in the course of a year. The hog would, in like manner, lose his superfluous fat. The cow, which, in the rich pastures of Normandy, yields twenty-four quarts of milk a day would then have no more than sufficient for suckling her calf.

To this it is replied, that this profusion of eggs, of fat, and of cream, from our domestic animals, is the effect of the food which is given them in such abundance. But neither does the mare give as much milk as the cow, nor the duck lay as many eggs as the hen, nor the ass accumulate fat like the hog, though all these animals are fed the one as plentifully as the other. Besides, the mare, the she-goat, the ewe, the she-ass, have but two teats, whereas the cow has four. The cow deviates in this respect, in a very remarkable manner from the general laws of Nature, which has proportioned in every species, the number of teats in the mother to that of the young; she, however, has four paps, though she produces but one calf, and very rarely two; because the two supernumerary teats were destined to afford nourishment to the human race. The sow, it is true has only twelve, though she brings up as many as fifteen young ones. Here the proportion appears deficient. But if the first has more teats than are requisite for her family, and the second has too few for her's, it is because the one is intended to give to man the surplus of her milk, and the other that of her young. In every country pork is the dish of the poor, unless religion, as in Turkey, or political considerations, as in the islands of the South Sea, deprive him of this gift of Nature. We shall observe, with Pliny, that of all flesh it is the most savory. You may distinguish in it, says he, fifty different tastes. It serves, in the kitchens of the rich, to give a flavor to every species of food. In every country, as we have before remarked, that which is most common is always the best.

Is it not strange that when so many plants and so many animals exhibit such beautiful proportions, such admirable

adaptations to our necessities, and such evident proof of divine beneficence, we should collect shapeless abortions, pigs with long snouts, as if our farm-yards teemed with elephants in miniature, and make an ostentatious display of them in our cabinets destined for the study of Nature? Do not those who preserve them as precious curiosities and deduce from them conclusions and doubts respecting the intelligence of her author, betray the same want of taste, and the same perversion of principle as those, who, in the shop of a founder, should collect the figures mutilated by some accident, and exhibit them as a proof of the ignorance of the artist? The ancients burned monsters; the moderns preserve them. They resemble those graceless children who watch their mother to surprise her in a fault, that they may arrogate to themselves the right of doing wrong. O! if the earth were, indeed, abandoned to disorder, and after an infinity of combinations, there should at last appear among the monsters that should cover it, a single body well-proportioned and adapted to the necessities of man, what a source of joy would be opened to creatures at once sensible and unhappy, to catch a faint glimpse of an Intelligence somewhere that took an interest in their destiny.

STUDY VII.

REPLY TO THE OBJECTIONS AGAINST PROVIDENCE FOUNDED ON THE CALAMITIES OF THE HUMAN RACE.

THE arguments deduced from the varieties of the human race, and the calamities accumulated upon man by the hand of Nature, by governments, and by religions, tend to prove that men have not the same origin, nor any natural superiority over beasts, that there is no hope of recompence

for their virtues, and no Providence to supply their wants. We shall successively examine these evils, beginning with those of Nature, the necessity and utility of which we shall demonstrate; and we shall shew that political evils are occasioned only by deviations from the law of Nature, and that they are themselves proofs of the existence of a Providence.

We shall enter upon this interesting subject with replying to the objections founded on the varieties of the human species. There are, it is true, black and white men, copper-colored and ash-colored. Some have beards and others scarcely any; but these pretended characters are mere accidents, as we have elsewhere asserted. Horses white, bay, or black, with hair frizzled like those of Tartary, or a smooth coat like those of Naples, are undoubtedly animals of the same species. The Albinos or white negroes are a species of lepers, and no more form a particular race of negroes than persons marked with the small-pox form among us a race of spotted Europeans. Though it does not enter into my plan, to oppose here all the harmonies of Nature to the accusations of our wretched system of physics, and though I have reserved some Studies in this work expressly for the discussion of this subject to the best of my poor abilities, yet I shall observe in this place, that the black colour is a blessing of Providence to the nations of the south. White reflects the rays of the sun most and black least. The former, accordingly, augments his heat and the latter weakens it; as experience proves in a thousand ways. Nature has employed, among other means, the opposite effect of these colours to diminish or to increase, on the earth, the heat of the orb of day. The farther we advance towards the south, the blacker are men and animals; and the farther we proceed northward the whiter they are. Nay even, when the sun withdraws from the northern regions, many animals, which in summer were of different colors, begin to turn white; such are the squirrels, wolves, hares: and those of the southern

regions, to which he is approaching, then assume darker tints. Such are, among the feathered tribes, the manakin, the cardinal, and others, which are of a much deeper color when the sun advances towards the Line than when he is retiring from it. It is therefore to adapt men to the climate, that Nature has made the inhabitants of the torrid zone black, and that she has given a white color to those of the icy regions. She has bestowed another preservative against the heat, on the negroes who inhabit Africa, which is the hottest quarter of the globe, principally on account of the broad zone of sand which crosses it, and whose utility we have before indicated. She has covered the heads of those tribes, devoid alike of care and industry, with hair more woolly than the fleece of the sheep, which effectually screens them from the burning heat of the sun. They are so sensible of its accommodation to this purpose, that they substitute no other shelter for it; and there is no nation among which artificial coverings, as bonnets, turbans, hats, &c. are more rare than among the negroes. These, which are foreign to them, are used only as objects of vanity and luxury; and I know of none that is peculiar to their nation. The inhabitants of the peninsula of India are as black as they, but their turbans communicate to their hair, which, but for that head-dress would probably be frizzled, the faculty of growing and expanding. The American tribes, residing beneath the Line, are not black it is true, but only copper-coloured. I ascribe this diminution of the black color to several causes peculiar to their country. The first is, that they rub themselves with *rocou*, which protects the surface of their skin from the too powerful impression of the sun. Secondly, they inhabit a country covered with forests, and traversed by the greatest river in the world, which covers it with vapors. Thirdly, their territory gradually rises from the coast of Brazil to the mountains of Peru; and from its elevation in the atmosphere, it consequently enjoys a greater degree of coolness. Fourthly and lastly, the east winds, which blow

there night and day, are constantly contributing to that coolness. In a word, the colors of all these nations are so much the effect of climate, that the descendants of Europeans who settle in those regions assume the same tints in the course of a few generations. This may be particularly observed in India, with regard to the descendants of the Mogols, people who originally issued from the north of Asia, whose name signifies *whites*, and who are now as black as the nations which they have conquered.

Tallness of stature is no more a characteristic of species, be the genus what it may, than difference of color. A dwarf apple-tree and a large one proceed from the same grafts. Nature, however, has rendered stature invariable in the human species alone, because variety of dimensions would have destroyed, in the physical order, the proportions of man to all the rest of her works, and would have produced, in the moral system, consequences still more dangerous, by irrevocably subjecting the smallest species of mankind to the largest.

There are no races either of giants or of dwarfs. Those who are exhibited at fairs are little contracted men, or tall overgrown fellows without proportion and without vigor. Neither the one nor the other produce offspring like themselves, whatever pains may have been taken by certain princes to effect that object, and among others by Frederic William the First of Prussia.* Besides are there propor-

* It is well known that this monarch had a particular predilection for tall men; and as this was his ruling passion, he spared no expence to procure them from all parts of Europe, to form his regiments of giants and grenadiers. How deeply he was interested in the pursuit of this his favorite object will appear from the following anecdote: As he was one day riding according to custom, in the vicinity of Berlin, very plainly dressed, and without attendants, he perceived a young woman of gigantic stature, being nearly seven feet in height, at work in the fields. At the sight of this tall woman, the king instantly imagined, that a couple of this kind could not fail to produce children of extraordinary size. He dismounted, and advancing towards the peasant, entered into conversation with her. To his no small satisfaction he learned that she was only nineteen years old and unmarried; on which he sat down and wrote a note to the colonel of his guards to this effect:—"You are to marry the bearer of this note with the

tions of the human species sufficiently distinct to deserve the appellations of dwarfs and giants? Is there between them so great a difference as between a little Sardinian poney and a large Flanders horse; as between a spaniel and one of the large Danish dogs which run before our coaches? All nations have ever been and still are of the same stature, with very little difference. I have seen Egyptian mummies and bodies of the Guanches of the Canary islands wrapped up in their skins.* I have seen at Malta the skeleton of a Carthagenian taken out of a tomb hewn in the solid rock, whose bones were all of a violet color, and who had perhaps lain there ever since the

tallest of my grenadiers. Let the ceremony be performed immediately and in your presence. You must be responsible to me for the execution of this order. 'Tis absolute and the least delay will make you criminal in my sight."—The king gave the letter to the young woman, who was ignorant of its contents, ordering her to deliver it punctually according to the direction, as it related to an affair of great importance. He then made her a handsome present and continued his route. The girl, believing it to be a matter of indifference whether the letter was delivered by herself or by another, charged an old woman with the commission, strictly enjoining her to say she received it from a man of such a dress and appearance. The old woman faithfully executed her message. The colonel, surprised at the contents of the letter, was unable to reconcile them with the age and figure of the bearer: but as the order was peremptory, he did not dare to disobey, and concluded that his majesty had chosen this method of punishing the soldier for some misdemeanor. In a word, the marriage was celebrated before him, to the great regret of the grenadier, while the old woman exulting with joy, assumed an air of the highest satisfaction. Some time afterwards the king was desirous of seeing the couple he had ordered to be married. When presented to him he fell into the most violent passion. The colonel in vain attempted to justify himself, and the king would not be appeased, till the old woman confessed the truth, finishing her tale by raising her eyes to heaven and thanking Providence for conferring on her a benefit the more signal and acceptable, as it was totally unexpected. T.

* The Guanches were the native inhabitants of the Canary islands at the time of their discovery by the Spaniards. Like the ancient Egyptians they possessed the art of perfectly embalming dead bodies, and at different times, mummies in high preservation have been discovered in the catacombs which are very frequent in the Canaries. The Spanish historians have preserved many monuments of the progress the Guanches had made in the arts; and all their accounts concur in establishing the fact that these people had arrived at a certain degree of civilization. Soon after the discovery of the Canaries, various adventurers undertook to conquer them for the court of Spain, and in the progress of this contest the Guanches were totally exterminated. T.

reign of Dido. All these bodies were of the ordinary size. Enlightened and unprejudiced travellers have reduced to a stature which differs very little from our own, the pretended gigantic form of the Patagonians. I am aware that I have already touched upon the same arguments, but they cannot be too often repeated, because they overturn, beyond the possibility of contradiction, the asserted influences of climate, which have become the principles of our physics, and what is still more of our morality.

We are told that real giants formerly existed. It is possible; but this truth, like all those of which Nature no longer furnishes any evidence, has become to us inconceivable. If Polyphemes, lofty as a tower, ever existed, they must have sunk most soils beneath them as they walked. How could their long and clumsy fingers have milked the little goats, reaped the corn, mowed the grass, and gathered the fruits of the orchard? Most of our aliments would have escaped their eyes as well as their hands. If, on the other hand, there had ever been generations of pigmies, how could they have levelled the forests to cultivate the earth? They would have lost themselves among the grass. Every rill would have been to them a river and every pebble a rock. The birds of prey would have carried them off in their talons,* excepting they make war upon their eggs, as Homer represents the pygmies engaged in war with those of the cranes. In these two hypotheses all the relations of natural order are burst asunder, and these discords necessarily involve the ruin of social order. Let us suppose the existence of a nation of giants possessing our industry and our ferocious passions. Place a Tamerlane at its head, and what would become of our fortifications and of our armies before their artillery and their bayonets?

* Not only the ideas, but the very words of our author have been borrowed by a late popular English writer. "A giant or a pigmy," says he, "could not have milked goats, reaped corn or mowed grass; we may add, could not have rode a horse, trained a vine shorn a sheep with the same bodily ease as we do, if at all. A pig ny would have been lost among rushes or carried off by birds of ey." *Paley's Natural Theology*, p. 220. T.

As much as Nature has affected variety in the species of animals of the same genus, though inhabiting the same soil and subsisting on the same aliments, so much has she studied uniformity in the human species, notwithstanding the difference of climates and of food. The accidental prolongation of the coccyx in some human individuals has been taken for a natural character, and on this the opinion of the existence of a new species of men with tails has been founded. The indulgence of the passions of brutes may degrade man, but never did their tails, their cloven feet, or their horns dishonor his noble figure. In vain is the attempt to bring him into the class of mere animals by gradual approximations. Were there any race of men with animal forms, or any animal endowed with human reason, they would be publicly exhibited. We should see them in Europe, especially now that the earth is traversed in every direction by enlightened travellers, and when, not princes, but puppet-shew-men bring alive to our fairs the wild zebra, the clumsy elephant, tigers, lions, white bears, and even crocodiles, which have been submitted to the inspection of the public in London. In vain do some writers seek analogies between the human female and the she oran-outang, in the situation and configuration of the breasts, in the periodical sexual purgations, in the attitude, and even in a kind of modesty. Though the female oran-outang passes her life in the forests, certainly Allegrain, as I have already observed, could never have borrowed from her the model of his Diana, which is seen at Lucienne. There is a much greater difference still between the reason of man and that of beasts, than exists between their forms: and his must have undergone a strange perversion, who should advance, as a celebrated author has done, that there is a greater distance between the understanding of Newton and that of any other man, than between the understanding of the latter and the instinct of an animal. As we have already observed, the most stupid of mankind is acquainted with the use of fire, and may be taught the practice of agricul-

ture, of which the most intelligent of animals is absolutely incapable; but what we have not yet asserted, the simple use of fire and the practice of agriculture are far superior to all Newton's discoveries.

Agriculture is the art of Nature, and fire is her primary agent. We know from experience, that, by this art and this element, men have acquired a plenitude of intelligence, of which all their other combinations are in some measure, merely consequences. Our sciences and our arts are principally derived from those two sources, and the difference they establish between the minds of men, is not greater than what exists between the dress and the furniture of Europeans and those of savages. As these are perfectly adapted to the necessities of both, they constitute no real difference between the understandings which contrived them. The importance we attach to our talents proceeds not from their utility but from our pride. We should have abundant reason for humiliation, were we to consider, that the animals, which are strangers to agriculture and the use of fire, attain most of the objects of our arts and sciences, and even surpass them. I shall say nothing of those which build, which spin, which make paper, cloth, hives, and practice a multitude of other trades that are not even known to us. But the torpedo defended itself from its enemies by an electric shock, before our academies had made any experiments on electricity; the limpet was acquainted with the power of the pressure of the air, and fastened itself to the rocks by forming a vacuum with its pyramidal shell, long before the discovery of the air-pump. The quails which every year take their departure from Europe, on their passage to Africa, have such a perfect knowledge of the autumnal equinox, that the day of their arrival at Malta, where they rest for twenty-four hours, is marked in the almanacs of the island about the 22d of September, and varies annually with the equinox. The swans and the wild ducks know precisely the latitude where they ought to stop, when they repair

annually in spring to the extremities of the north, and steer their flight, without compass or quadrant, to the places where the year before they made their nests. The man-of-war birds, which fly several hundred leagues from east to west, between the tropics, over vast oceans uninterrupted by any land, and return at night to the rock scarcely peering above the surface of the water, which they left in the morning, possess means of ascertaining their longitude that are still unknown to our ablest astronomers.

Man, we are told, owes his intelligence to his hands, but the monkey, the delared enemy of all industry, likewise has hands. The sluggard or sloth, too, has hands, which ought to have suggested to him the idea of providing for his security, of at least scooping out a retreat in the earth for himself and his posterity, exposed by the slowness of their movements to a thousand accidents. Many animals are furnished with instruments much more ingenious than hands, and are not, on that account, the more intelligent. The gnat has a trunk which acts at once as a pike to pierce the flesh of animals, and a sucker to extract their blood. This proboscis likewise contains a long saw, with which he opens the small blood-vessels at the bottom of the wound it has made. He is, besides, provided with wings to transport himself to whatever place he pleases, a corslet of eyes round his little head, to perceive objects in every direction around him, claws so sharp that he can walk on a perpendicular plate of polished glass, feet furnished with brushes to clean himself, a plume of feathers on his forehead, and an instrument equivalent to a trumpet, with which he proclaims his victories. He inhabits the air, the earth, the water, where he enters into life in the worm, and where the female deposits her eggs before she expires. With all these advantages he is often the prey of insects smaller and worse organized than himself. The crawling ant, furnished with no other weapon than pincers, is formidable not only to him, but likewise to much larger animals and

even to quadrupeds. She knows what the united force of a multitude is capable of effecting; she forms republics; she stores up provisions; she constructs subterraneous towns: she forms her attacks in whole armies, she advances in columns, and in hot countries, sometimes even compels man himself to resign to her his habitation. So far from the intelligence of any animal depending on its members, their perfection, on the contrary, is frequently in an inverse ratio to its sagacity, and appears to be a compensation of Nature to balance the deficiency. To ascribe the intelligence of man to his hands, is to deduce the cause from the means, and talent from the tool it employs. It is the same as if we were to assert that Le Sueur was indebted for the graces of his pictures to a pencil of sable's hair, and that Virgil owed the harmony of his verses to the quill of a Mantuan goose.

It is still more extravagant to maintain, that human reason depends on climate, because there is some variety in the manners and customs of different nations. The Turks cover their heads with turbans, and we cover ours with hats; they wear long robes, and we have coats with short skirts. In Portugal, says Montagne, they drink the sediment of wine; we throw it away. Other examples which I could introduce, are of similar importance. To all this I reply that we should act like these people if we were in their country, and they would act as we do, if they were in ours. Turbans and long robes are adapted to hot countries, where it is necessary to keep the head and body cool, by inclosing in the covering of both a large mass of air. From this necessity proceeds the use of turbans among the Turks, the Persians, and the Indians, of mitres among the Arabs, of sugar-loaf hats among the Chinese and Siamese, and of the wide flowing robes worn by most of the nations of the south. From a contrary necessity, the people of the north, as the Poles, the Russians and the Tartars wear fur-caps and close garments. We, in our rainy climate are obliged to have three gutters

on our hats,* and short coats on account of the dirt. The Portuguese drink the sediment of wine. We should do the same with the wines of Portugal; for in sweet wines, like those of hot countries, the most saccharine part is at the bottom of the cask; and in ours, which are spirituous, there is nothing at the bottom but dregs, the best being uppermost. In Poland, where they drink great quantities of Hungarian wines, I have seen the bottom of the bottle presented as a mark of preference. Thus the very variety of national customs proves the consistency of human reason.

Climate has not a more powerful influence in changing the morality of men, which is reason in perfection. I, however, admit, that intense heat and cold have an effect on the passions. I have even remarked, that the hottest days in summer and the coldest in winter were the seasons of the year in which most crimes were committed. The dog-days, say the vulgar, are a season of calamity. They might assert the same of the month of January. I think it must have been in conformity to these observations, that the ancient legislators established, at those critical periods festivals intended to dissipate the melancholy of mankind, such as the Saturnalia among the Romans, and the feasts of Kings among the Gauls. In each nation the festival was adapted to the public taste; among the former, it presented the image of a republic; among our ancestors that of a monarchy. But I have likewise remarked, that these seasons fertile in crimes are also productive of the most brilliant actions. This effervescence of the seasons operates on our senses like that of wine. It gives us a powerful impulsion, but indifferent alike to good or evil. Besides, Nature has implanted in our souls two powers, which always balance each other in equal proportion. When the physical sense of love debases us, the moral

* The author here alludes to the practice of wearing cocked hats, the use of which has been, for many years, superseded by that of round ones. T.

sentiment of ambition raises us up again. The equilibrium necessary to the empire of virtue subsists, and is never totally lost but in those minds, in which it has been destroyed by the habits of society, and still more frequently by those of education. The ruling passion, having then no longer any counterpoise, assumes the dominion over all our faculties, but it is the fault of society, which is punished for it, and not that of Nature.

I must, however, remark, that these same seasons exercise their influence on the passions of man, by acting only on his moral and not his physical principle. Though this reflection has the air of a paradox, I shall support it with a very remarkable observation. If the heat of a climate can act on any human body, it must certainly be when it is in the womb of its mother; for it then acts on that of all animals whose expansion it accelerates. Father du Tertre, in his excellent history of the Antilles, says, that in those islands, the period of gestation of all European animals is shorter than in the temperate climates; and that hen's eggs are not longer in hatching than the seed of the orange in bursting from confinement, that is, twenty-three days. Pliny had observed, in Italy, that they hatch in nineteen days in summer, and in twenty-five days in winter. In every country, the temperature of the climate accelerates or retards the development of all plants and the gestation of all animals, the human species excepted. Let this be attentively remarked. "In the Antilles islands," says Father du Tertre, women, whether white or black, go nine months with child, as in France." I made the same remark in all the countries through which I have travelled; at the Isle of France; at the tropic of Capricorn, and at the extremity of Russian Finland. This observation is very important. It demonstrates that the human body is not subjected, in this respect, to the same laws as the other animals. It manifests in Nature a moral intention, that preserves an equilibrium in the population of nations, which would be deranged, had the pregnancy of women in hot

countries, been of shorter duration than in cold. This intention is likewise manifested in the admirable proportion maintained in the production of the two sexes, so nearly equal, and even in the difference which we find between the number of males and females in one country and in another: for it is balanced from north to south in such a manner, that if there be rather more females born in the south, there are rather more males born in the north, as if Nature designed to invite nations the most remote from each other to unite by intermarriages.

Climate has an influence on morals, but they are not determined by it, as some have imagined. Though this supposed determination is considered in many modern books as the fundamental basis of the legislation of nations, there is no philosophical opinion more completely refuted by the evidence of history. "Liberty," say they, "has chosen the lofty mountains for her asylum; it was the North that gave birth to the proud conquerors of the world. In the southern plains of Asia, on the contrary, reign despotism, slavery, and all the vices, political and moral, produced by the loss of liberty." Must we then regulate by the barometer and the thermometer the virtues and the happiness of nations? We have no occasion to leave Europe, in order to find a multitude of monarchical mountains, such as those of Savoy, a part of the Alps, of the Appenines, and the whole range of the Pyrenees. We shall see, on the contrary, in its plains, many republics, such as those of Holland, Venice, Poland, and even of England. But each of these countries, has, by turns, made trial of different forms of government. Neither cold, nor ruggedness of the soil, inspires man with the energies of liberty, and still less with those of the unjust ambition of encroaching on that of another. The peasants of Russia, of Poland, and of the cold mountains of Bohemia have been slaves for ages; while the Angrias and the Mahrattas are free-men and tyrants in the south of India. There are several re-

publics on the northern coast of Africa,* where it is excessively hot. The Turks, who subdued the fairest portion of Europe, were the offspring of the mild climate of Asia. The timidity of the Siamese and most of the Asiatics has been adduced: but it proceeds, among those nations, from the multitude of their tyrants rather than from the heat of their country. The Macassers, who inhabit the island of Celebes, situated almost under the Line, possess such intrepid courage, that, as the gallant Count Forbin relates, a very small number of them armed only with poinards, put to flight all the Siamese and French under his orders, at Bancok, though the former were very numerous, and the others were armed with muskets and bayonets.

If from courage we pass to love, we shall see that climate determines man as little in this case as in the other. With regard to the excess of this passion, I might refer to the testimony of travellers to discover which have the superiority in this respect, the nations of the north or those of the south. In every country love is a torrid zone to the human heart. We must observe, that this distribution of love to the nations of the south, and of courage to the nations of the north, has been contrived by our philosophers as the effects of climate upon foreign nations alone; for they unite these two qualities, as effects of the same constitution, in those of our heroes, to whom they mean to pay their court. According to them, a Frenchman, great in feats of love, likewise performs brilliant achievements in war; but the same rule is not applicable to other nations. An Asiatic with his seraglio is an effeminate coward, and a Russian, or any other soldier of the north, whose courts give pensions, is a second Mars. But all these distinctions

* To perceive that the author classes England among the republics will not perhaps create much surprise, as there is no monarchical government whose constitution approaches so nearly to the republican: but the impropriety of including under the same denomination the States of Algiers, Tunis and Tripoli, where the throne of despotism is but too firmly established, must be apparent to every reader. T.

of temperament, founded on climate and injurious to mankind, are overthrown by this simple question: are the turtle-doves of Russia less amorous than those of Asia; and are the tigers of Asia less ferocious than the white bears of Nova Zembla?

Without going from the same spot to seek objects of comparison among men, we shall find a greater diversity in manners, opinions, dress, nay even in physiognomy, between an opera-actor and a Capuchin, than between a Swede and a Chinese. What a contrast is the Greek, talkative, flattering, deceitful and so fondly attached to life, to the Turk, silent, haughty, sincere, and ever devoted to death! Yet these men of such different characters are born in the same towns, breathe the same air, live on the same food. But their race, we are told, is not the same. for pride, among us, ascribes a powerful influence to the effects of blood. Yet most of these Janissaries, so formidable to those cowardly Greeks, are their own children, whom they are compelled to deliver as a tribute, and who are afterwards incorporated into this highest class of the Ottoman soldiery. Are not the Bayaderes of India so voluptuous, and its penitents so austere, of the same nation and often of the same family.

In what instance, let me ask, was an inclination to vice or to virtue ever known to be communicated with the blood? The generous Pompey was the son of Strabo, infamously notorious among the Roman people for his avarice. The cruel Domitian was brother to the excellent Titus; Caligula and Agrippina the mother of Nero, were, indeed, brother and sister; but they were the children of Germanicus, the hope of the Romans. The barbarous Commodus was son to the divine Marcus Aurelius. What a difference is frequently observable in the same man, between his youth and his mature age; between Nero, saluted, on his accession to the throne, with the title of father of his country; and Nero who before his death was declared its enemy; between Titus branded in his youth with the name of a

second Nero, and Titus, embalmed at his death with the tears of the senate, of the people, and of foreigners, and unanimously styled the delight of mankind! It is not, then, the climate that regulates the moral system of man: it is opinion, it is education, and such is their power that they triumph not only over latitudes, but likewise over temperament. Cæsar so ambitious and so debauched, and Cato, so virtuous, were both of a weakly constitution. Place, climate, nation, family, temperament, can, therefore, in no part of the world, determine men to vice or to virtue. They are every where at liberty to chuse.

Before we treat of the evils which men have brought upon themselves, let us take a review of those inflicted on them by Nature. Why, it may be asked, should beasts of prey exist? They are indispensably necessary. But for them the earth would be infected with the multitude of carcases. There annually perish of a natural death, at least one-twentieth part of the quadrupeds, one tenth of the birds, and an infinite number of insects, most of the species of which live only a year. Nay there are insects whose lives are confined to a few hours, such as the ephemeron. As the rains convey all these spoils into the rivers and thence into the seas, it is, accordingly, on their shores that Nature has collected the animals which are destined to consume them. Most of the rapacious beasts descend by night from the mountains to hunt there for their prey; there are even several classes created expressly for those situations; such are the amphibious animals, as the white bear, the otter, and the crocodile. It is particularly in hot countries, where the effects of corruption are more rapid and more dangerous, that Nature has multiplied carnivorous animals. Tribes of lions, tigers, leopards, panthers, civet-cats, ounces, jackals, hyænas, condors, &c. repair thither to reinforce those of wolves, foxes, martens, otters, vultures, crows. Legions of devouring crabs are nestled in their sands; alligators and crocodiles lie in ambush among their reeds; shell-fish of innumerable species, armed with utensils fit for sucking, piercing, filing, bruis-

ing, roughen the surface of the rocks, and pave the borders of their seas; clouds of sea-fowl, fly, with loud screams, over their shallows, or sail round and round at the discretion of the waves, in quest of their prey; the lamprey, the pike, and all the species of cartilaginous fishes which live only on flesh, such as the long shark, the broad ray, the polypus furnished with air-holes, and all the varieties of the sea-dog, swim about in multitudes, incessantly employed in devouring the fragments of bodies which are driven to those parts. Nature likewise calls the insect legions, to accelerate the work of destruction. The wasps, provided with scissars, cut asunder the flesh, the flies suck up the fluids, and the sea-worms gnaw in pieces the bones. On the southern coasts and at the mouths of rivers, the latter are so numerous, and armed with such formidable augers, that they can devour a ship of war in less time than it required to build her, and have lately reduced the maritime powers to the necessity of sheathing the bottoms of their vessels with copper, to preserve them from their attacks. The wreck of all these bodies, after having served for food to innumerable tribes of other fishes, some of which have snouts like a spoon and others like a pipe, to lick up the very crumbs of this vast table, being reduced, at length, by such multiplied digestions into phlegms, oils, bitumens, and combined with the pulps of vegetables, which are carried down from all quarters into the ocean, would re-produce in its waters a new chaos of putrefaction, did not its currents convey their solution to the volcanoes, whose fires complete the decomposition, and give them back to the elements. It is for this reason, as we have already observed, that volcanoes are numerous only in hot countries; that they are all situated in the vicinity of the sea, or of great lakes; that they are placed at the extremities of their currents, and that they owe entirely to the purification of the waters those sulphurs and bitumens, which afford their furnaces a perpetual supply.

Animals of prey are, by no means, objects of terror to man. Most of them, in fact, never roam abroad but in the night. They have prominent characters which announce their approach even before it is possible to perceive them. Some smell strongly of musk, as the marten, the civet-cat, the crocodile; others have piercing voices which may be heard by night at a very great distance, as the wolves and jackals; others have glaring colors that are perceived afar off on the yellow grounds of their skin; such are the black stripes of the tiger, and the dusky spots of the leopard. All of them have eyes that sparkle in the dark. Nature has even bestowed a part of these common signs on the carnivorous and blood-sucking insects; such is the wasp with a yellow ground-color, striped with black, like the tiger; and the gnat, spotted with white on a dark ground, which announce their approach by a loud buzzing. Even those which attack the human body are distinguished by remarkable indications. They have either a disagreeable smell as the bug, or oppositions of color to the places on which they fix themselves, as the light-colored insects on the hair, or the blackness of the flea on the whiteness of the skin.

Many writers have loudly complained of the cruelty of ferocious animals, as if our cities were liable to be invaded by wolves, or the lions of Africa made, from time to time, incursions on the European colonies.* They all shun the habitations of man, and most of them, as I have already observed, go abroad only in the night. These habits are unanimously attested by naturalists, hunters, and travellers. When I was at the Cape of Good Hope, M. de Tolback,

* "It seems to me," says Dr. Paley, "that part of the mischief complained of, arises from animals, the human animal most especially, occupying situations upon the earth which do not belong to them. The folly and wickedness of mankind, and nec ities proceeding from these causes, have driven multitudes of t pecies to seek a refuge among burning sands, whilst countries, essed with hospitable skies, and with the most fertile soils, remain almost without a human tenant. We invade the territories of wild beasts and venomous reptiles, and then complain that we are infested by their bites and stings." T.

the governor, informed me, that lions were formerly very common in those parts; but since the Dutch settled there, you must travel fifty or sixty leagues up the country before you meet with one. After all, what is their ferocity to us; If we had not arms, which they are incapable of resisting, and a sagacity superior to all their cunning, Nature has given us dogs able to combat them, and has admirably adapted their species to those of the most formidable animals. In the native countries of lions, there are breeds of dogs capable of engaging them in single combat. I shall quote what Pliny says of a dog of this species, presented to Alexander by a king of Albania. "King Alexander ordered a lion to be let loose upon him, but the dog instantly tore him in pieces. He then directed an elephant to be opposed to him, and this afforded the king the highest diversion he had ever enjoyed. For the dog, bristling himself up from the first, began to turn about and bark at the elephant; and then attacked him, leaping on this side and on that, with all imaginable dexterity; now advancing to the assault, now couching first on one side and then on the other, obliging the elephant to turn and wheel about so frequently, that being at length quite exhausted, he fell, with a shock that made the ground tremble, on which the dog leaped upon and dispatched him." I can scarcely imagine this animal to have been of the same breed as our lap-dogs.

The animals formidable to man are more to be feared on account of their smallness than their magnitude; yet there is none which is not subservient to his benefit. Serpents, centipedes, scorpions, toads, inhabit scarcely any other than humid and unwholesome situations, from which they keep us away more by their hideous figures than by their poisons. Serpents that are really dangerous have signs which announce them when at a distance, such are the rattles of the snake which thence derives its name. Few, except the imprudent, perish by the wounds they inflict.* Besides, our hogs and our poultry swallow them

* The cases of bites which produce death in large animals are

without sustaining any inconvenience. Ducks in particular, devour them with avidity, as they do most poisonous plants. Those of the kingdom of Pontus acquired such virtue by aliments of this kind, which are there very common, that Mithridates employed their blood in his celebrated counter-poisons.

There are, it must be admitted, noxious insects which attack our fruits, our seeds, and even our persons; but if caterpillars, may-bugs and locusts ravage our fields, it is because we destroy the birds of our groves which live upon them; or because, when we transport into our own country the trees of foreign climes, as the horse-chesnut, the ebony, and others, we remove with them the eggs of the insects which they nourish, without importing the birds of the same climate, that feed upon them. Each country has birds peculiar to itself for the preservation of its plants. At the Cape of Good Hope I saw one called the *gardener's friend*, continually employed in catching worms and caterpillars, which he stuck upon the thorns of the bushes. I have likewise seen in the Isle of France, a species of starling called martin, which comes from India, and lives entirely on locusts and insects which infest the cattle. If we were to naturalize these birds in Europe, it would be more beneficial to man than any scientific discovery that was ever made. But the birds of our own groves are sufficient to clear our fields of noxious vermin, provided the bird-catchers be prohibited to ensnare them as they do, by whole covies, in their nets, not to confine them in cages, but often to make food of them. Some years ago it was thought proper in Prussia to proscribe

very few, and there are said to be no instances of stings proving mortal. The Abbé Fontana found by numerous experiments that it required the united venom of five exasperated vipers to kill a dog of moderate size, but that a single bite was sufficient to dispatch a mouse or a frog. He seems to be of opinion that the bite of the rattle-snake would not usually be mortal, though he admits that, in particular cases, as when the puncture had touched some very tender part, for instance, a principal nerve, or some more considerable lymphatic vessel, death might speedily ensue. T.

the sparrows as injurious to agriculture. Each peasant was subjected to an annual capitation-tax of twelve heads of those birds, which were employed in making saltpetre; for, in that country, nothing is wasted. In the second or third year, it was discovered that the crops were devoured by insects, and it was found necessary to invite the sparrows, with all possible speed, from the neighbouring countries to re-people the kingdom. These birds, it is true, eat a few grains of corn when insects fail them; but the latter, particularly the weevil, consume it by bushels and by whole granaries. If, however, it were possible to exterminate the whole race of insects, it would be the height of imprudence to attempt it; for in their destruction we should involve that of most of the birds of our fields, which have no other food for their young while in the nest.*

As to the animals which attack the corn in our granaries, and the wool in our warehouses, such as rats, mice, weevils and moths, I find that the former are useful to purify the earth from human excrement, on which they, in a great measure, subsist. Besides, Nature has given man the cat to clear the interior of his habitation of those vermin. She has endowed that animal, not only with wonderful agility, patience, and sagacity, but with a spirit of domestication adapted to her employment. The cat attaches herself solely to the house. If her master removes from it, she returns alone, at night, to her former habitation. In this respect she differs essentially from the dog who attaches himself only to the person of his master. The cat has the affection of a courtier and the dog that of a friend: the former adheres to the possession, the latter

* Bradley, in his Treatise on Husbandry and Gardening, has demonstrated, that a pair of sparrows, while feeding their young, consume upon an average 3360 caterpillars every week, and this calculation he founded on actual observation. But it is not only on these all-devouring animals that the sparrows prey, for they likewise feed their young with butterflies and many other winged insects, which would otherwise prove the parents of a progeny equally destructive. T.

to the person. The weevil and the moth, sometimes, it is true, commit great depredations among our corn and our woollens. Some writers have asserted that the hen is sufficient to clear the granary of them. This may possibly be the case, but we have, besides, the spider and the swallow which destroy them at the season when they take the wing. I shall here consider only their political utility. When we behold those vast magazines, where monopolizers hoard the provision and the clothing of a whole province, ought we not to bless the hand that created the insect which obliges them to bring those commodities to market? Were corn as incorruptible as gold and silver, it would soon become as scarce. See under how many doors and locks those metals are secured! The common people would at length be deprived of subsistence, if it were as little susceptible of alteration as that which is the representative of it. The weevil and the moth oblige the miser, in the first instance, to employ a great number of hands to stir and sift his grain, till they at length force him to dispose of it altogether. How many poor wretches would go naked, did not moths devour the wool of the rich! What is truly wonderful, is, that articles of luxury are not liable to be destroyed by insects, like those which are subservient to the most pressing necessities of life. Coffee, silk and even cotton may be kept, without injury, for ages; but, in India, where these commodities are real necessaries, there are insects which very speedily destroy them, particularly cotton. The insects which attack the human body, in like manner, oblige the rich to employ those who have nothing, as domestics, to preserve cleanliness around them. The Incas of Peru even exacted this tribute of the poor; for, in every country, these insects attach themselves to man, though it has been said, that they do not pass the Line. They are, besides, rather teazing than noxious: they draw off the bad blood. As they abound only in very hot weather, they invite us to have recourse to bathing, a practice so salutary and yet so

much neglected among us, because, being expensive, it is become an object of luxury. After all, Nature placed near us other insects which destroy them; these are spiders.* I have heard of an old officer, who, being much incommoded with bugs at the *Hotel des Invalides*, permitted the spiders to multiply round his bed, and the latter delivered him from those vermin. To many persons, it is true, this remedy will appear worse than the disease. But I believe others more agreeable may be found in perfumes and oily essences, at least, I have remarked, that the smell of various aromatic plants drives away those nauseous animals.

As to the other calamities inflicted by Nature, man is effected by them only because he deviates from her laws. If storms sometimes ravage his orchards and his corn-fields, it is because he often places them in situations where Nature never intended them to be. Storms scarcely ever injure any thing but the cultivation of man: the forest and the natural meadow escape their tremendous effects. They have, besides, their utility. Thunder-storms cool the air. The showers of hail, which sometimes accompany them, destroy a multitude of insects; and they are not frequent but in the seasons when those insects are hatched and multiply—in spring and in summer. But for the

* I presume that it must be a particular species of spider. It is my opinion that there are as many species of spiders as there are of insects. All of them do not spread nets; some catch their prey fairly in the chace, and others by lying in ambuscade. I have seen, at Malta, a spider of a very remarkable kind, and which is very common in the houses of that island. Nature has bestowed on this insect such a conformation, that she resembles a fly in the head and the fore-part of the body. When she perceives a fly on the wall, she first approaches, in great haste, always taking care to be above it. Having advanced to the distance of five or six inches, she proceeds very slowly, presenting to the fly a treacherous resemblance, and when she is not further from it than two or three inches, she springs suddenly upon her victim. This leap on a perpendicular plane, must, you would suppose, precipitate her to the ground. No such thing. You find her again on the wall, whether she has missed her prey or seized it; for previous to her leap she fastens to it a cord, which prevents her from falling. Cartesian philosophers! Can you still continue to consider animals as mere machines?

hurricanes of the torrid zone, the ants and the locusts would render the islands situated between the tropics unin habitable. We have already treated of the necessity and utility of volcanoes, whose fires purify the waters of the sea, as the lightning purifies the air. Earthquakes proceed from the same cause. Besides, Nature forwarns us of their effects, and of the places where their focuses are situated. The inhabitants of Lisbon know well that their city has several times been destroyed by shocks of this kind, and that it is imprudent to build with stone. In a house constructed with wood, no apprehension need be entertained. Naples and Portici are perfectly acquainted with the fate of Herculaneum. After all, earthquakes are not universal; they are local and periodical. Pliny has observed, that Gaul was not subject to them; but there are likewise many other countries which are exempted from their destructive effects. They are scarcely ever felt but in the vicinity of volcanoes, on the shores of the sea or of great lakes, and only on certain portions of their coasts.

The epidemic maladies of man, and the contagious diseases of animals are generated by corrupted waters. Physicians, who have investigated their causes, ascribe them sometimes to the corruption of the air, sometimes to the mildew of plants, sometimes to fogs; but all these causes are nothing more than effects of the corruption of the waters, from which arise putrid exhalations, that infect the air, the animals, and vegetation. This must in almost every instance, be ascribed to the injudicious labors of man. The most unhealthy regions of the globe, as far as I can recollect, are in Asia, on the banks of the Ganges, from which every year proceed pestilential fevers, that, in 1771, cost Bengal more than one million of lives.* They

* The author appears to have committed a mistake in ascribing the mortality in Bengal, in 1771, to a pestilential fever. The historians who have treated of that country represent it as having proceeded from famine—a famine more terrible than any on record in the annals of mankind. Not only one million, but thrice that number of

are generated by the plantations of rice, which are artificial marshes, formed along the Ganges, for the cultivation of that grain. After the harvest, the roots and the straw of the plant, which are left on the ground, putrefy and transform the fields into infectious puddles, from which pestilential vapors are exhaled. It is on account of these fatal consequences, that the culture of rice has been prohibited in various parts of Europe, particularly in Russia, in the country round Oczakoff, where it was formerly very common. In Africa, the air of the island of Madagascar is corrupted by the same cause, during six months of the year, and will ever oppose an insuperable obstacle to the formation of any European settlement upon it. All the French colonies established there, have perished one after another, from the insalubrity of the air; and I should myself have fallen a victim to it, had not divine Providence, by means which I could not foresee, cut short my voyage and prevented my intended residence in that part of the world. It is from the ancient, muddy canals of Egypt that the leprosy and the plague are perpetually issuing. In Europe, the ancient salt-marshes of Brouge, to which the water of the sea no longer has access, and in which the rain-waters stagnate, being confined by the dykes and the ditches of the old salt-works, have become constant sources of distempers among cattle. Similar diseases, putrid and bilious fevers, and the land-scurvy annually issue from the canals of Holland, which putrefy in summer to such a degree, that I have seen those of Amsterdam covered with dead fishes, and it was impossible to pass through certain streets, without applying my handkerchief to my nose. The water, it is true, is drawn off by means of wind-mills, which pump it up, and throw it over the dykes, in places where the canals are below the level of the sea; but these machines are not sufficiently numerous. The bad air of

the wretched inhabitants were swept away by it in the short space of a few weeks. It is not impossible that pestilence might have aided in the destruction which famine began. T.

Rome, in summer, proceeds from its ancient aqueducts, whose waters are diffused among the ruins, or which have inundated the plains, whose levels have been interrupted by the works of the ancient Romans. The scarlet fever, the dysentery, the small-pox, so common in the country after the heats of summer, proceed, for the most part, from the ponds of the farmers, in which leaves and vegetable substances are suffered to putrefy. Many of the distempers of our cities have their origin in the lay-stalls situated near them, and in the cemeteries that surround our temples, and have even encroached on their very sanctuaries. It is my opinion, that there would not have been a single unhealthy spot on the face of the earth if men had not put their hands to it. The insalubrity of the air of St. Domingo, of Martinique, of Porto Bello, and of several other parts of America, is mentioned as a natural effect of the climate. But these regions have been inhabited by savages, who, from the earliest ages, have occupied themselves with diverting the courses of rivers and choaking up rivulets. These labours even constitute an essential part of their system of defence. They imitate the beavers in the fortification of their villages, by inundating the circumjacent country. Provident Nature has, however, placed those animals only in cold latitudes, where, in imitation of herself, they form lakes, which temper the sharpness of the air; and she has placed running waters in hot latitudes, because there lakes would soon be changed, by evaporation, into putrid marshes. The lakes which she has scooped out in such latitudes, are all situated among mountains, at the sources of rivers, and in a cool atmosphere. I am the more induced to ascribe to the savages the corruption of the air, so fatal in some of the Antilles, as all the islands which have been found uninhabited were extremely healthy; such as the Isle of France, Bourbon, St. Helena, and some others.

As the corruption of the air is a subject peculiarly interesting to us all, I shall venture to suggest, by the way, some simple methods of preventing it. The first is, to remove the

causes, by substituting, instead of the ponds in our fields, the use of cisterns, the waters of which are so salubrious, when they are judiciously constructed. They are universally employed all over Asia. We must likewise cease to throw the carcases of animals into the lay-stalls of our cities, and carry them to the rivers, which will thus be rendered more productive of fish. If the towns have no rivers to carry off these substances, or if this method is attended with too great inconvenience, care should at least be taken to place the lay-stalls only to the north and north east of such towns, to avoid, during summer, the fetid gusts which the south and south-west winds would waft to them.* The second is, to refrain from digging canals. We have seen what diseases have resulted from those of Egypt, in the vicinity of Rome, and elsewhere, when attention is not paid to keep them in repair. Besides, the advantages derived from them are very problematical.† To look at the medals struck in our own country, on occasion of that of Languedoc, should we not be led to imagine that the Streight of Gibraltar was henceforth to become superfluous to the navigation of France? Granting it to be of some utility to the internal commerce of the country, has the mischief it has done to the plains been balanced against that advantage? Have not so many rivulets and streams, diverted and collected on every side to form a navigable canal, ceased to water a considerable tract of land? Can that be regarded as beneficial to commerce which is injurious to agriculture? Canals are

* A method of obviating this disgusting inconvenience still more effectual than that suggested by the author, would undoubtedly be to bury the bodies of such animals in the earth, which I believe to be the general practice in this country. The custom which appears to prevail universally in France, of suffering carcases to putrefy above ground, can, one would imagine, be the result only of the most inconsiderate indolence. T.

† Few readers will be inclined to admit that M. de St. Pierre's observations on canals are, by any means, applicable to those of this country, where the inhabitants have learned by experience duly to appreciate their many and important advantages. T.

only suitable for marshy situations. This is the third method of contributing to restore salubrity to the air. The works commenced in France for the draining of marshes, have always cost a great number of lives, and have, for that reason, frequently remained incomplete. I know of no other cause for this, than the precipitation with which attempts of this kind are undertaken, and the method of proceeding which is adopted. The engineer presents his plan, the contractor gives in his estimate, the minister grants his approbation, the prince furnishes money, the governor of the province provides labourers; all concur at once to the end proposed, excepting Nature From the bosom of the rotten earth rise putrid exhalations, which soon scatter death among the workmen. To remedy these inconveniences, I shall subjoin some observations, which I believe to be well founded. A track of land entirely covered with water is never unwholesome. It becomes so only when the water which covered it evaporates, and leaves exposed to the air the mud of its bottom and sides. The putridity of a morass might be corrected as effectually by converting it into a lake as into dry land. Its situation must decide which of these two measures ought to be adopted. If it is very low, without any declivity and outlet, the indication of Nature should be followed, and it ought to be covered with water. If there is not enough to inundate it entirely, deep trenches might be dug in it, and the earth from them might be thrown on the adjacent lands. We should then have, at the same time, canals always full of water, and islands, dry, fertile, and healthy. As to the season for those labors, the spring and autumn ought to be chosen; great care should be taken to place the labourers to windward, and to obviate, by means of machinery, the necessity to which they are often reduced, of plunging into the mud and slime to clear them away.

It has always appeared unaccountable to me, that France, where there are so many judicious establishments, has minis-

ters for foreign affairs, for war, the marine, finance, commerce, manufactures, the clergy, buildings, equitation, &c. and none for agriculture. The reason of this, I imagine, is the contempt in which the peasantry are held. All men, however, are sureties for each other; and independently of the uniform stature and configuration of the human species, I would desire no other proof that they all spring from the same original. It is from the pond of the poor man, which has been robbed of its streamlet, that an epidemic distemper shall issue to sweep away the inhabitants of the neighbouring castle. Egypt avenges herself by the plague, which arises from her canals, of the oppression of the Turks, who prevent her inhabitants from keeping them in repair. America, subdued by the arms of Europeans, exhales from her bosom a thousand maladies fatal to Europe. She drags down with her the Spaniard expiring on her ruins. Thus the Centaur left to Dejanira his robe npoisoned with the blood of the hydra, a present that was to prove mortal to his conqueror. Thus the miseries inflicted on mankind, pass from the hut to the palace, from the line to the poles, from past to future ages; and their prolonged effects are a fearful voice, crying to the powers of the earth: "Learn to be just and not to oppress the unfortunate."

Not only the elements, but reason itself, is corrupted in the haunts of the wretched. How many errors, fears, superstitions, discords, have proceeded from the lowest stages of society, to the terror and subversion of thrones! The more men are oppressed, the more miserable are their oppressors, and the more feeble is the nation which they compose; for the force that tyrants employ to secure themselves at home, is never exercised but at the expence of that which they might employ to maintain their respectability abroad.

In the first place, from the bosom of misery issue prostitution, theft, murder, conflagration, robbery, revolt, and a multitude of other physical evils, which, in all countries, are the fatal consequences of tyranny. But those of opinion

are still more terrible. One man is desirous to subjugate another, not so much with a view to obtain possession of his property, as to command his admiration and even his reverence. Such is the end which ambition proposes to itself. However low may be the condition to which it has reduced him.—it may have his fortune, his labours, his wife, his person at its disposal, still it has nothing unless it has gained his homage Haman was not satisfied with possessing the power over the lives and fortunes of the Jews; he wanted likewise to behold Mordecai at his feet. Oppressors thus make the oppressed the arbiters of their happiness; and the latter in general, repaying injustice with injustice, torment them with false reports, religious terrors, slanders, calumnies, which engender among them suspicions, apprehensions, jealousies, hatred, feuds, litigation, duels, and finally, civil wars, that terminate in their destruction.

Let us examine this re-action of evils in some governments both ancient and modern; we shall find its extent proportionate to the evils inflicted under them on mankind. This tremendous balance will oblige us to acknowledge the existence of a supreme justice.

Without paying regard to their common divisions* into democracies, aristocracies, and monarchies, which are, in reality mere political forms, that determine neither their felicity nor their power, let us take into consideration only their political constitution.

* Politicians, in classing governments according to the exterior resemblances in form, have acted precisely in the same manner as botanists, who comprise in the same species such plants as have similar flowers or leaves, without paying any attention to their virtues. The latter have included in the same class the oak and the pimpernel, and the former the republics of Rome and St. Marino. It is not in this manner that Nature ought to be observed; she is throughout nothing but concord and harmony. Her spirit, not her form, should be the object of our study.

If, in the history of a people, you pay no attention to its moral and internal constitution, of which scarcely any historian deigns to treat, it will be impossible to conceive how republics, apparently well constituted, were plunged into sudden ruin; how others, on the contrary, which seemed to be incessantly convulsed, became formi-

Every government of whatever description is happy at home and respectable abroad, when it allows all its subjects the natural right of attaining to fortune and honor; and the contrary takes place, when it reserves for a particular class of citizens the benefits which ought to be common to all. It is not sufficient to prescribe bounds to the people, and to restrain them within these by terrific phantoms: they quickly oblige those by whom they are set in motion to tremble more than themselves. When human policy locks its chain to the ancle of a slave, divine justice rivets the other end round the neck of the tyrant.

Few republics have been more equally constituted than that of Lacedæmon. There virtue and happiness were seen to flourish during a period of five hundred years. Notwithstanding the smallness of her territory, she gave law to Greece and to the northern coasts of Asia; but as

dable; whence arise the duration and the power of despotic states so much decried by modern writers; and finally, how it happened that, after the brilliant reigns of a Marcus Aurelius and of an Antoninus, which have been so highly extolled, the Roman empire hastened so speedily to its dissolution. It was, I venture to affirm, because those good princes were solicitous only to preserve the exterior form of the government. All was tranquil around them; the form of a senate existed; Rome was plentifully supplied with corn; the garrisons in the provinces were regularly paid. There was no sedition, no disturbance; every thing to appearance went on well: but during this lethargy, the rich were augmenting their vast possessions, the poor were losing the little they had, and the great offices of state were engrossed by the same families. To procure the means of subsistence, the common people were obliged to attach themselves to the great: Rome contained only a population of menials. The love of country was extinguished. The wretched knew not of what to complain. No one did them any wrong. Every thing was in order, but by this very order they were excluded from all participation in honors or emoluments. The citizens had not their throats cut as in the days of Marius and Sylla, but they were suffocated.

In all human societies there are two powers, the one temporal the other spiritual. You will find them in all the governments of the world, in Europe, Asia, Africa and America. The human race is governed in the same way as the human body. Such is the decree of the author of Nature, for the preservation and the happiness of mankind. When the people are oppressed by the spiritual power, they seek protection of the temporal; when the latter in its turn oppresses, they have recourse to the other. When both unite to render them miserable, then arise swarms of heresies, schisms, civil wars, and a multitude of secondary powers, which balance the abuses of the two first, till a general apathy succeeds and the state sinks into destruction.

Lycurgus had not comprehended in his plan, either the nations whom Sparta afterwards subdued, or the Helots who cultivated the ground for her, it was through them that the commotions which shook and at length overturned the state were introduced.

In the Roman republic there was still more equality and therefore more happiness and power. It was, indeed, divided into patricians and plebeians; but as the latter were capable of attaining the highest military dignities, as they were likewise eligible to the office of tribunes, whose power was not only equal but even superior to that of the consuls, the utmost harmony subsisted between the two orders. It is impossible to observe without emotion the deference and respect paid by the plebeians to the patricians during the most flourishing periods of the republic. They choose their patrons from among them; they attended them in crowds on their way to the senate-house; when they were poor, they raised voluntary contributions to provide a marriage portion for their daughters. The patricians on the other hand, took an interest in all the concerns of the plebeians; they pleaded their causes before the senate; they gave them their own names, adopted them into their families, and even gave them their daughters in marriage, when they had distinguished themselves by their virtues. These alliances with plebeian families were not disdained even by emperors. Augustus gave his daughter Julia in marriage to the plebeian Agrippa. Virtue reigned at Rome, and never had alters more worthy of her been raised on earth. Of this we are enabled to form a judgment, by the rewards assigned there to good actions. A criminal was condemned to be starved to death; his daughter obtained permission to visit him and kept him alive by the milk of her own breast. The senate, informed of this act of filial affection, decreed that the father should be restored to his child, and that on the spot where the prison stood, a temple should be erected to Piety.

If a person under sentence of death, was met on his way

to the place of execution by a vestal, he was pardoned The punishment due to guilt disappeared in the presence of virtue. If in battle one Roman rescued another from the hands of the enemy, he was invested with the civic crown. This crown was composed merely of oak-leaves, and it was the only military crown, that was not adorned with gold; but it conferred the right of sitting, at all public spectacles, on the bench next to that of the senators, who all rose, as a mark of respect, on the entrance of him who wore it. It was, says Pliny, the most illustrious of crowns and it entitled the possessor to more privileges than the mural, obsidional, or naval crowns, because there is more glory in saving a single citizen, than in taking towns and gaining battles. For this reason it was the same, whether the person saved was the general of the army or a private soldier: but it was not to be attained by delivering an allied king who might have come to the assistance of the Romans. In the distribution of rewards, Rome distinguished only the citizen. With these patriotic sentiments she conquered the earth; but she was just only to her own people, and it was by her injustice to other men that she became weak and unfortunate. Her conquests filled her with slaves, who under Spartacus, brought her to the brink of destruction, into which, they, at length, precipitated her by the arms of corruption, more dangerous than those of war. By the vices and the flatteries of the Greek and Asiatic slaves at Rome, were formed the Catilines, the Cæsars, the Neros; and while their voice was corrupting the masters of the world, that of the Goths, the Cimbri, the Teutones, the Gauls, the Allobroges, the Vandals, the companions of their fate, invited their countrymen from the north and the east to complete her destruction.

Modern governments exhibit a similar re-action of equity and prosperity, of injustice and misfortune. In Holland where the common people may aspire to the highest honors, bundance pervades the state, good order prevails in the

towns, fidelity in marriage, tranquillity in every mind; disputes and law suits are rare in that country, because all its inhabitants are contented. Few European nations possess a territory so contracted and none has extended her power so far. Her riches are immense; she singly maintained a war against Spain in the zenith of her splendor, and afterwards against France and England united. Her commerce extends over the whole surface of the globe; she possesses powerful colonies in America, rich settlements in Africa, and formidable kingdoms in Asia. But if we trace to their source the misfortunes and the wars in which she has been involved for two centuries, it will be perceived that they proceeded from the injustice of some of her establishments in those countries. Her prosperity and her power are not to be ascribed to her republican form of government, but to that community of benefits which she presents indiscriminately to all her subjects, and which produces the same effects in despotic governments, of which such dreadful pictures are drawn.

Among the Turks, as among the Dutch, there are neither quarrels nor calumnies, nor theft nor prostitution in the cities. Nay, in their whole empire, there is not, perhaps, to be found a single Turkish woman who is a professed courtezan. The public mind is disturbed neither by restlessness nor jealousy. Each sees, without envy, in his superiors, a distinction attainable by himself, and is ready to sacrifice his life for his religion and the government of his country. The power of the Turks abroad, is not inferior to their union at home. However great may be the contempt with which our historians speak of their ignorance and their stupidity, they have made themselves masters of the fairest portions of Asia, Africa, Europe, and even of the empire of the Greeks, so celebrated for their learning and their wit, because the sentiment of patriotism which unites them is superior to all the talents and the tactics in the world. They are subject, however, to frequent convulsions, from the rebellion of conquered nations;

but the most dangerous proceed from their feeblest enemies, from those very Greeks whose property they pillage with impunity, and whom they compel to furnish a yearly tribute of children for the seraglio. From these children issue, by a re-acting Providence, most of the janissaries, agas, pachas, and vizers, who oppress the Turks in their turn and render themselves formidable even to their sultans.

It is this same community of hopes and of fortunes, presented to men of all ranks and conditions, which has given so much energy to Prussia, whose police at home and whose victories abroad have been so highly extolled, though the government is still more despotic than that of Turkey, since the prince is absolute master both in spirituals and temporals.

The republic of Venice, on the contrary, so well known for her courtezans, and for the restlessness and jealously of her government, is extremely weak internally, though more ancient, in a more advantageous situation, and in a much finer climate than Holland. Venice is a maritime power, now scarcely known in the Mediterranean, while Holland vivifies the whole earth by her commerce, because the former has restricted the rights of humanity to the class of nobility and the latter has extended them to the whole mass of her people.

It is in consequence of the same unjust division that Malta, with the finest port in the Mediterranean, situated between Africa and Europe, and filled with a young nobility of undaunted courage, will ever remain the last power in Europe, because the people there are nothing.

We shall here observe that hereditary nobility in a state destroys all emulation in the noble and the commoner. It stifles that quality in the first who have no need of it, because by their birth alone, they are entitled to distinction and in the second, because, being precluded from aspiring to honors, it is perfectly useless to them. This is the political vice which has ruined the power of Portugal and

of Spain, and not the monastic spirit as some writers have asserted. The monks were all-powerful in the time of Ferdinand and Isabella. It was a monk, who decided at court, the expedition of Christopher Columbus for the discovery of a new world, the conquest of which multiplied fourfold the number of gentlemen in Spain. Not a Spanish soldier went over to America, but gave himself out for a man of a noble family and on his return to Spain, with a little money in his pocket, made good his title. The same was the case with the Portuguese who made conquests in Asia. The military order in both those nations, at that time, performed prodigies, because the career of ambition was then opened to the commonalty in arms. But since it has been shut against them by the prodigious number of gentlemen with which those two states abound, the people have flocked to the monastic order and thus given it a preponderancy.

However admirable the triple union which composes the government of England may appear to our political speculators, it is to the agitations of these three powers that we must ascribe the perpetual disputes which disturb the tranquillity of that country and the venality with which it is, at length corrupted. The commons it is true form one of the houses of parliament; but the right of sitting in it being retricted to persons possessing landed property, it must, of course be shut to many a wise head, and be open to many which are not exactly of that description. Alcibiades and Catiline would there have made a distinguished figure; but Socrates, the just Aristides, Epaminondas, who conferred on Thebes the empire of Greece, Attilius Regulus* who was called from the plough to the dictatorship, Menenius Agrippa, who reconciled the senate and the people, would not have been able to obtain a sea

* The author doubtless meant to say Cincinnatus, who, it is well known was summoned from the plough to the command of the Roman army, and who after defeating the enemy and enjoying the honours of a triumph immediately returned to his humble occupation. I have no recollection, at least, that any circumstance of the kind is recorded of Regulus. T.

because they had not estates in land of so many hundreds a year. Britain would be destroyed by her boasted constitution, did she not present a common career to every citizen in her navy. All the orders of the state concur in point of union and give it such a preponderance that it fixes their political equilibrium. Whoever could destroy the marine of England would overthrow her government. This unanimous concurrence of the whole nation towards a single art, has imparted to it, a higher degree of perfection than any other nation ever attained, and renders it the sole instrument of the power of that country.

If we survey the other states which bear the name of republics, we shall find internal wretchedness and external imbecillity increase in proportion to the inequality of their citizens. Poland has reserved all authority to the nobility exclusively and has left her commonalty in the most detestable slavery, so that war, which establishes between the citizens of one and the same nation a community of dangers, establishes between those of Poland, no community of rewards. Her history exhibits nothing but a long series of quarrels between Palatinate and Palatinate, between city and city, between family and family, which have always rendered her exceedingly unhappy. Most of the nobles themselves are reduced to such wretchedness that, for a subsistence, they are obliged to perform the meanest offices for the grandees, as our own formerly did under the feudal government, and as is still the case in Japan; for wherever the peasantry are slaves, the gentlemen are menials. Poland has, at length in our days, been overtaken by a calamity, which would long ago have fallen upon her, if the kingdoms by which she was surrounded had not then labored under the same defects in their constitution. In spite of her long political discussions, she has been seized by her neighbours, as the Greek empire was subdued by the Turks, at a time when certain priests who had transferred all the power into their own hands, paid attention to nothing but theological subtilties.

In Japan the wretchedness of the nobles is in proportion to their tyranny. They formed at first a feudal government which, like all others of the same nature, was so easy to be subverted, that the first of the chiefs who aspired to the sovereignty attained the object of his wishes by a single battle. He deprived them of the power of deciding their quarrels by civil wars, but suffered them to retain all their other privileges; that of ill-treating the peasants who are mere slaves, the right of life and death over all those who are in their pay, and even over their wives. The mass of the people, which, being plunged into extreme misery, possesses scarcely any other means of subsistence than by intimidating or corrupting its tyrants, produces, in Japan, an incredible multitude of bonzes of every sect, who have erected temples on all the mountains; comedians and buffoons who have set up theatres at the corner of every street; and courtezans in such numbers that the traveller meets with them in every road, and at every inn where he stops. But these very people set such a very high value on the consideration exacted of them by the nobility, that if only a cross look pass between two of them, they must fight; and if the insult be of a serious nature, it is absolutely necessary that both the injured party and the aggressor should rip up each other, upon pain of infamy. It is to this hatred of their tyrants that we must ascribe the extraordinary attachment manifested by them to the Christian religion, which they looked upon as destined to efface by its morality, distinctions so abominable between man and man; and to popular prejudices must be referred that contempt which the Japanese nobles display on a thousand occasions, for a life rendered so precarious by the opinion of another.

A sage equality proportioned to the talents and the understandings of all its subjects, long rendered China the happiest portion of the earth; but a taste for pleasure

having, at last, corrupted the morals of the people, money which procures it, has become the moving principle of the government. Venality has there divided the nation into two great classes, the rich and the poor. The ancient steps by which men rose to all employments, still subsist, but the rich only ascend them. This vast and populous empire, having no longer any patriotism but what consists in a few vain ceremonies, has several times been invaded by the Tartars who have been invited into the country by the wretchedness of the people

The Negroes, in general, are considered as the most unfortunate race of men on the face of the globe. It appears indeed as if some destiny had condemned them to slavery. Some imagine that they discover in them the effects of that ancient malediction: Cursed be Canaan! a servant of servants shall he be to his brethren. They confirm it themselves by their traditions. According to the Dutch writer Bosman, "the Negroes of Guinea say, that God, having created the blacks and the whites, offered them the choice of two gifts, namely the possession of gold, or the knowledge of the art of reading and writing; and as God gave the first choice to the blacks they preferred gold, and left learning to the whites. Their wish was granted. But, being irritated with this lust of gold, he, at the same time, decreed that the whites should have eternal dominion over them, and that they should be obliged to serve their white brethren as slaves."*

* Bosman's Voyage to Guinea, letter X., This opinion of the modern Negroes does them great honor. They are sensible of the inestimable value of knowledge; but could they have seen the fate of most men of letters in Europe, and that of the men who possess gold, they would have reversed their tradition.

Similar opinions are entertained by the blacks of other parts of Africa, and among the rest of the natives of the Cape de Verd islands, as may be seen in the excellent account of them published by George Roberts. That unfortunate navigator sought refuge in the island of St. John, where he received from the inhabitants the most affecting proofs of generosity and hospitality, after having experienced the most cruel treatment from his countrymen, some English buccaneers, who took from him his vessel.

It must, however be acknowledged, that if some African tribes

It is far from being my intention to support either by sacred authorities, or by such as these unfortunate people themselves furnish, the tyranny we exercise over them. If the malediction of a father has been able to exercise such an influence over his posterity, the benediction of the Almighty, which under the Christian religion, extends to them as well as to us, re-instates them in all the liberty of the law of Nature. The scriptures, which enjoin us to consider all men as our brethren, speak for them as for our countrymen. Were this the proper place, I would shew how Providence enforces, in their favor the laws of universal justice, by rendering their tyrants in our colonies a hundred times more miserable than they. Besides, how

excel us in moral qualities, yet, in general the Negroes are greatly inferior to other nations in those of the understanding. They have not yet discovered the art of taming the elephant like the Asiatics. They have not brought to perfection any species of culture. For that of most of their alimentary vegetables they are indebted to the Arabs and the Portuguese. They practice none of the liberal arts, which had made considerable progress among the inhabitants of the New World, much more modern than they. They are placed on a part of the continent, whence they might with ease have penetrated to America, as the east winds would have blown them all the way thither; and yet they had not even discovered the islands on their own coasts, such as the Canaries and those of the Cape de Verd. The black powers of Africa, never had the genius to construct a single ship of war. So far from attempting to extend their boundaries, they have suffered foreigners to take possession of their coasts. For in ancient times the Egyptians and the Phenicians settled on their eastern and northern shores, which are now occupied by the Turks and the Arabs; and for some ages the Portuguese, the English, the Danes, the Dutch and the French have seized what remained in the east, the south and the west, solely for the purpose of procuring slaves. A particular Providence must after all preserve the patrimony of these children of Canaan from the rapacity of their brethren, the children of Shem and Japhet: for it is astonishing that we, sons of Japhet, in particular, who as younger brothers seek our fortune all the world over, and according to the benediction of our father, Noah, even take up our abode beneath tents of our elder brother Shem, by our settlements in Asia, should never have established colonies in a portion of the earth so beautiful and so near to us as Nigritia, where the sugar-cane, the coffee-plant, and most of the productions of Asia and America might be cultivated, and where slaves are to be had in abundance on the spot.

Politicians may ascribe the different characters of Negroes and Europeans to whatever causes they please. For my part, I declare, with perfect conviction, that I know of no book, which contains monuments more authentic of the history of nature and nations, than the book of Genesis.

many wars has not the African slave-trade kindled among the maritime powers of Europe! How many diseases and corruptions of blood have not the Negroes produced among us! But I shall confine myself to their condition in their native land, and to that of their countrymen, who abuse their power over them. I know not that there ever existed among them a single republic, excepting perhaps some little aristocracy on the west coast of Africa, such as that of Fantim. They are subject to a multitude of petty kings, who sell them at pleasure. But on the other hand the state of these sovereigns is rendered so deplorable by the priests, the fetichis, the grigris, sudden revolutions, the want even of the necessaries of life, that very few of our sailors would exchange conditions with them. Besides the Negroes escape the greatest part of their miseries by their thoughtlessness and the versatility of their imaginations. They dance in the midst of famine as in the bosom of abundance; in chains, as in liberty. If a chicken's foot fills them with terror, a piece of white paper is sufficient to revive their courage. Every day they make and destroy their deities according to their caprice.

It is not in stupid Africa, but in India, so celebrated for its ancient wisdom, that the miseries of mankind are carried to the highest pitch. The Bramins, formerly called Brachmans, who are the priests of that country, have divided the nation into various casts, some of which, as that of the Parias, they have consigned to infamy. Their own, as might be expected, they have taken care to render sacred. No person is worthy to touch them, to eat in their company, and still less to contract any alliance with them. This imaginary superiority they have supported by incredible superstitions. From their hands issued that infinite number of Gods, of monstrous forms, which have scared the imaginations of all the natives of Asia. The commonality, by a natural re-action of opinions, render them, in their turns, the most wretched of mankind. They oblige them, in order to preserve their reputation, to wash

themselves from head to foot, at the slightest pollution by contact, to observe frequent and rigorous fasts, to perform the most horrible penances before their formidable idols, and as they are not permitted to be allied to them by blood, they compel their widows, by the power of prejudice over tyrants, to burn themselves alive with the corpses of their husbands. Is it not a dreadful condition for men who are accounted wise and who give law to their nation, to see their friends and their relatives, their daughters, their sisters, their mothers perishing by this horrid kind of death? Travellers have extolled their knowledge; but is it not an odious alternative for enlightened men, either perpetually to terrify the ignorant by opinions which, in the end, subjugate even those who preach them; or, if they are so fortunate as to preserve their reason, to make a shameful and criminal use of it, by employing it in the propagation of falsehood? How is it possible that they can esteem each other? How can they retire within themselves, and raise their eyes to that Deity, of whom, as we are told, they entertain ideas so sublime, and of whom they exhibit to the people images so tremendous? Whatever may be the melancholy fruit which their ambition derives from their policy, it has been productive of the calamities of that vast empire, situated in the most delightful region of the globe. The military consists of the nobles called Naires, who hold the second rank in the state. The Bramins, in order to support themselves by force as well as by artifice, have admitted them to a participation in some of their privileges. Walter Schouten makes some observations on the indifference of the common people towards the Naires amidst the calamities that overtake them. After a bloody contest, in which the Dutch killed many of those who had taken the side of the Portuguese, "no outrage or insult," says he, "was offered to any artisan, peasant, fisherman, or other inhabitant of Malabar, not even in the heat of the battle. None of them in consequence thought of flight. Many of them had taken post at different places to be spectators of

the action, and they appeared to feel no manner of interest in the fate of the Naires." I have seen the same apathy in countries where the nobility forms a separate nation, among others, in Poland. The commonality of India subject their Naires as well as their Bramins to the miseries of opinion. The Naires cannot contract legitimate marriages. Many of them, known by the name of Amocas, are obliged to sacrifice themselves in battle or on the decease of their kings. They are the victims of their unjust honour as are the Bramins of their inhuman religion. Their courage, which is nothing more than the spirit of the profession, instead of being serviceable to their country, is frequently fatal to it. In every age it has been desolated by intestine wars, and it is so feeble externally, that handfuls of Europeans have established themselves in it wherever they pleased. At the conclusion of the war in 1762, an Englishman proposed to the British parliament to make a conquest of it, and to pay the national debt with the wealth he should find, if government would convey him thither with an army of five thousand Europeans. His project astonished none of those of his countrymen who were acquainted with the weakness of that country, and is said to have been disapproved only because it was unjust.

In France the people had no share in the government from the time of Julius Cæsar, who was the first writer that made this observation, but not the last politician that availed himself of it to obtain with ease the dominion over them, to Cardinal de Richelieu, who overthrew the feudal power. During this long interval our history exhibits nothing but a series of dissensions, civil wars, dissolute manners, assassinations, Gothic laws, barbarous customs, and furnishes very little that is interesting to the reader, notwithstanding what is said by the president Henault, who compares it to the history of Rome. It is not merely because the fables of the Romans are more ingenious than our's, but because in our history the reader finds not the history of a people, but only that of some great family.

We must, however, except the lives of a few good kings, such as those of St. Louis, Charles V. Henry IV. and some virtuous men, who are interesting to us because they interested themselves for the nation. In every other part of our history you cannot perceive in what manner the government employed itself; it studied only the interest of nobles. France was successively subdued by the Romans, the Franks, the Goths, the Huns and the Normans. The facility with which she embraced Christianity proves that she sought in religion a protection against the miseries of slavery. To this sentiment of confidence the clergy was indebted for the first rank which it obtained in the state: but the clergy soon degenerated from its original spirit, and so far from attempting to destroy tyranny, it enlisted under the banners of tyrants, adopted all their customs, assumed their titles, usurped their rights and revenues, and even made use of their arms to defend interests so opposite to its precepts. Many churches had knights and champions who supported their pretensions in single combat.

We must not impute to Religion the mischiefs occasioned by the avarice and the ambition of her ministers. She herself instructs us how to detect their faults and enjoins us to be on our guard against them. The greatest saints, among the rest St. Jerome, have exposed the vices of the clergy with greater warmth than any modern philosophers. Much has been lately written against Religion, with a view to diminish the power of priests; but wherever she has fallen, their power has increased. 'Tis Religion alone that restrains them within bounds. Observe in the Archipelago and elsewhere how many fraudulent and lucrative superstitions the Greek *papas* have substituted for the spirit of the Gospel! Whatever reproaches may be cast on our own clergy, they may reply, that they have ever been the children of their age, like the rest of their countrymen. The nobles, the magistrates, the very monarchs of past times were not better than they. They have been accused of propagating a spirit of intolerance and of aiming at do-

minion by preaching humility. But many of them, rejected by the world, carry with them into their order that spirit of intolerance which prevails in the world and of which they have been the victims; and their ambition is very often nothing more than a consequence of that universal ambition with which the national education and the prejudices of society inspire all the members of the state. Without meaning to apologise for the clergy, or to inveigh against that or any other body, whose evils I endeavour to discover only for the purpose of indicating such remedies as seem to me to be within its reach, I shall here confine myself to some reflections on religion, which, even in this life, is the scourge of the wicked and the consolation of the good.

The world, at the present day, considers religion as the concern only of the vulgar, and as a political contrivance to keep them in order. The philosophy of Socrates, of Epictetus, of Marcus Aurelius is placed in opposition to it; as if the morality of these sages were less austere than that of Jesus Christ; and as if the benefits promised by it were more certain than those of the gospel! What a profound knowledge of the heart of man, what admirable adaptation to his necessities, what affecting touches of sensibility are contained in that divine book! Its mysteries I leave out of the question; part of them, we are told, were borrowed from Plato. But Plato himself obtained his knowledge of them in Egypt, where he had travelled, and the Egyptians were indebted for them, like ourselves, to the patriarchs. These mysteries, after all, are not more incomprehensible to us than those of Nature, or than that of our own existence. Besides, in our examination of them we contribute to bewilder ourselves. We endeavour to trace them back to their sources, and we are capable only of perceiving their effects. Every supernatural cause is equally impenetrable to man. Man himself is but an effect, a transient result, a combination of a moment. He is incapable of judging of divine things by their nature, he forms his ideas of them from his own, and from the cor-

respondence which they have with his wants. If we make use of these testimonies of our weakness, and of these indications of our hearts in the study of religion, we shall find that no religion on earth is so adapted to the wants of human nature. Of the antiquity of its traditions I shall say nothing. The poets of most nations, Ovid among the rest, have sung the creation, the happiness of the golden age, the indiscreet curiosity of the first woman, the calamities which issued from Pandora's box, and the universal deluge, as if they had copied those histories from Genesis. To the recent existence of the world have been objected the antiquity and the multiplicity of certain lavas in volcanoes: but have these observations been accurately made? The eruptions of volcanoes must have been much more frequent in the early ages, when the earth was more covered with forests, and when the ocean, charged with its vegetable spoils, supplied their furnaces with a greater abundance of matter. Besides, as I have already observed in the course of this work, we cannot distinguish between what is old and what is modern in the structure of the world. The creation must have manifested, at its very birth, the stamp of age. Were we to suppose it eternal and abandoned merely to the laws of motions, even the smallest hill must have long since disappeared from its surface. The action of the rain, of the winds and of gravity, would have reduced all the land to the level of the sea. It is not in the works of God, but only in those of man, that epochs are distinguishable. All human monuments announce the recent date of the earth we inhabit. Were it, I will not say eternal, but only of high antiquity, we should find works of human industry much more ancient than three or four thousand years, such as those with which we are acquainted. We have substances on which time makes no perceptible alteration. I have seen in the possession of the learned Count de Caylus constellated rings of gold, or Egyptian talismans, as entire as if they had just come from the hands of the workman. The st

vages who have no knowledge of iron are acquainted with gold, and value it as much for its durability as for its lustre. Instead, therefore, of finding antiquities of only three or four thousand yearrs, such as those of the most ancient nations, we ought, in that case, to discover some of sixty, one hundred, two hundred thousand years. Lucretius, who ascribed the creation of the world to atoms, by a system of physics perfectly unintelligible, confesses that its formation is of quite recent date.

> Præterea, si nulla fuit genitalis origo
> Terrai et cœli, semperque æterna fuêre;
> Cur supra bellum Thebanum et funera Trojæ
> Non alias alii quoque res cecinêre poetæ?
>
> *De rerum natura*, lib. v. v. 326.

"Had heaven and earth no beginning, but existed from eternity, why have no poets sung of other events prior to the war of Thebes and the destruction of Troy?"

The earth is filled with our religious traditions: they serve as a foundation to the religion of the Turks, the Persians, and the Arabs; they extend over the greatest part of Africa; we meet with them again in India, whence all nations and all arts originally proceeded. We trace them in the ancient and mysterious religion of the Bramins in the history of Brama or Abraham, of his wife Saraï or Sara, in the incarnations of Wistnow or Christnou; in a word they are diffused even among the wandering savages of America. I shall say nothing of the monuments of our religion, as universally extended as its traditions, one of which, inexplicable by the laws of our philosophy, proves a general deluge by the wreck of marine bodies scattered over the surface of the globe: another irreconcileable to the laws of our politics, attests the reprobation of the Jews, dispersed through every region, hated, despised, persecuted, without government, without territory, and yet always numerous, always subsisting, and always faithful to their law. In vain have attempts been made to trace resemblances between their fate and that of several other nations, as the

Armenians, the Guebres, and the Banians. But the individuals of those nations scarcely ever pass the confines of Asia; their numbers are inconsiderable; they are not hated nor persecuted by other nations; they have a country; finally, they have not preserved the religion of their ancestors. Illustrious writers have given due weight to these supernatural proofs of a divine Justice. I shall content myself with adducing others still more affecting, from their correspondence to Nature and to our necessities.

The morality of the gospel has been attacked, because, in the country of the Gadarenes, Jesus Christ permitted a legion of demons to take possession of a herd of two thousand swine, which instantly precipitated themselves into the sea. "Why," it is asked, "should he ruin the proprietors of those animals?" On this occasion Jesus Christ acted as a legislator. Those who reared these swine were Jews; they, therefore, violated the law, which declares those animals unclean. But here a new objection is raised against Moses. "Why are those animals pronounced unclean?" Because in the climate of Judea they are subject to leprosy. This affords a subject of fresh triumph to our wits. "The law of Moses," say they, "was then relative to the climate, it was, consequently, a mere political law. To this I reply, that were I to find in the Old or New Testament any custom which had no relation to the laws of Nature, I should be much more astonished. It is the character of a religion divinely inspired, to be perfectly adapted to the happiness of mankind, and to the laws previously established by the Author of Nature. From the want of this correspondence all false religions may be distinguished. For the rest, the law of Moses, from its privations, was intended to be the law of a particular people, whereas that of the gospel, from its universality, must have been intended for the whole human race.

Paganism, Judaism, Mahometanism have all forbidden the use of certain species of animals; so that, if one of these religions were to become universal, it would produce

either the total destruction, or unlimited multiplication of that species; which would evidently be contrary to the plan of the creation. The Jews and the Turks proscribe the hog; the Indians on the shores of the Ganges reverence the cow and the peacock. There is not an animal which does not serve as a Fetiche to some Negro, or as a Manitou to some Savage. The christian religion alone permits the necessary use of all animals, and does not particularly enjoin abstinence from those of the land excepting in the season when they are procreating, and when those of the sea abound on the shores, at the beginning of spring.* All religions have filled their temples with carnage, and have immolated to the Deity the lives of animals. Even the Bramins, so compassionate towards them, present to their idols the blood and the lives of men. The Turks sacrifice camels and sheep. Our religion, more pure, if we merely consider the matter of the sacrifice, presents in homage to God, bread and wine, the most valuable gifts he has bestowed on man.† We shall likewise observe that the vine grows from the Line to the fifty-second degree of North Latitude, and from England to Japan; that it is the most extensively diffused of all fruit-trees; that corn is almost the only alimentary plant which thrives in all climates; and that the liquor of one and the flour of the other may be preserved for ages and conveyed to the remotest parts of the earth. All religions have permitted men a plurality of wives; Christianity allowed but one, long before our politicians observed, that the two sexes

* The reader will perceive that M. de St. Pierre, educated in the Roman Catholic faith, here endeavours to assign a reason drawn from Nature for the fasts which, during the season of Lent, are observed in that church of which he is a member. T.

† The author is here again led by his religion into an error, or at least an inaccuracy of expression. He is speaking of the sacrament of the Lord's Supper, which in Roman Catholic countries is called the *Sacrifice of the Mass*. Hence he considers the christian as presenting to God, in the sacrament, an offering of bread and wine. How opposite this is to the nature and intention of that institution the Protestant reader need not be told. T.

are born in equal numbers. All have boasted of their genealogies; and looking down with contempt on most nations, they have permitted their votaries, whenever they had it in their power, to reduce them to slavery. Ours alone has protected the liberty of all men, and has called them to one and the same end, and to one and the same origin. The religion of the Indians promises pleasure in this world, that of the Jews riches, that of the Turks conquest; ours enjoins the practice of virtue and promises the reward of it in heaven. Christianity alone knew that our unbounded passions were of divine original. It has not limited love, in the heart of man to a wife and children, but extends it to all mankind; it has not circumscribed ambition to the glory of a party or of a nation, but has directed it to heaven and immortality; it designed our passions to serve as wings to our virtues.* So far from

* Religion alone imparts a great character to our passions. It diffuses over innocence ineffable charms, and communicates a divine majesty to grief. Of this I shall subjoin two instances. One of them is extracted from an account of the island Santorini, by Father François Richard a Jesuit missionary, which is not held in very high estimation, but which contains some things that please me by their ingenuous simplicity. Of the other I was myself an eye-witness.

"After dinner," says father Richard, "I repaired to St. George's, which is the principal church of the island of Stampalia. There a *Pope* brought me a book of the gospels, to discover whether I could read their language as well as I spoke it. Another came and asked me whether our holy father the pope were married. But I was still more diverted by the question of an old woman, who after looking at me a considerable time, requested me to tell her if I really believed in God and in the Holy Trinity. I replied in the affirmative, and to convince her, I made the sign of the cross. 'O! said she, how glad I am that thou art a Christian! We had some doubts concerning it.' On this I took from my bosom the cross I wore, and the woman with transport exclaimed: 'Why should we any longer question his being a good Catholic since he adores the cross! Another then approached whom I asked whether she was come to confess. 'What!' said she, 'is it not a sin to confess to such as you? No,' replied, 'for though I am a Frank, I confess in Greek.' 'I will go, she rejoined, 'and ask our bishop.' She soon afterwards returned overjoyed at having obtained permission. After confession I gave her an *Angus Dei*, which she shewed to every one as a curiosity they had never seen before. I was instantly surrounded with women and children who solicited me for presents of the same kind. I told them that they were only given to such as had confessed. To gain their point they then offered to confess, and would have done so in pairs; that is, a young girl with her female confidant, and a lad with

confining us to the earth to render as miserable, it is Religion that bursts asunder the chains by which we are held captives. How many calamities has she soothed! how many tears has she wiped away! how many hopes has she inspired, when there was no longer room for hope! how many doors of repentance she has opened to guilt! how many supports she has given to innocence! Ah! when her altars rose amid our forests, ensanguined by the knives of

his bosom-friend, whom they denominate Ἀδελφοπίθονε, confidential brother, assigning as a reason, that they had but one heart, and consequently, that there could be no secrets between them. I had some difficulty to separate them; but they were at length obliged to submit."

Some years ago I was at Dieppe about the time of the autumna. equinox, and a heavy gale having sprung up, as is very common at that season, I went to observe its effects on the sea-shore. It was about noon: several large boats had left the harbour in the morning for the purpose of fishing. While I was observing their manœuvres, I perceived a number of country girls, handsome, like most of the females of the *Pays de Caux*, who were coming out of the town, with their long white head-dresses, which fluttered about their faces in the wind. They proceeded playfully to the extremity of the pier, which was covered from time to time with the spray. One of them, pensive and melancholy kept at a distance from the rest. Her eyes were fixed on the distant boats, some of which could scarcely be perceived amidst the black horizon. Her companions began at first to rally her, in order to divert her attention. "What," said they, "is your sweet-heart yonder?" But finding that she still continued pensive, they called out: "Come, we will not stay here! Why do you make yourself uneasy? Come along, come along with us!" They accordingly took the way that led to the town. The young woman followed them slowly, without making any reply; and when they were nearly out of sight, behind some heaps of stones that were on the road, she approached a great crucifix erected in the middle of the pier, took some money from her pocket, dropped it into the box at the foot of the cross; then knelt and with hands clasped and eyes fixed on heaven, preferred her supplication. The billows with a deafening roar breaking upon the coast, the wind agitating the large lanterns of the crucifix, the danger at sea, the solicitude on the land, and confidence in heaven, gave to the love of this poor country girl an extent and a dignity which palaces cannot communicate to the passions of the great.

Her tranquillity was soon restored, for all the boats arrived the same afternoon, without having sustained any injury.

Religion has often been calumniated by having our political evils laid to her charge. On this subject Montaigne, who lived in the midst of civil wars, says: "Let us confess the truth: If any one should take from the army even legally assembled, those who joined it from the zeal of a religious affection, and those whose only motive is the protection of the laws of their country, and the service of their prince, he would not be able to make up with the number a single company of soldiers." *Essays*, book 2. chap. xii.

the Druids, how the oppressed flocked thither in quest of an asylum; how many inveterate enemies there embraced with tears; how tyrants, melted to pity, felt, from their lofty towers, the sword drop from their hands! They had known no empire but that of terror, and they saw the empire of charity spring up in its stead. Thither lovers hastened to mingle their vows, to swear a mutual affection even beyond the tomb. Christianity allowed not a single day to hatred, and promised an eternity to love. Ah! if this religion were designed only for the consolation of the wretched, it was consequently instituted for the happiness of the human race.

Whatever may have been said of the ambition of the church of Rome, she has often exerted her influence in behalf of suffering humanity. The following instance, taken at random, is submitted to the judgment of the reader. It relates to the African slave-trade, practised, without scruple, by all the christian and maritime powers of Europe, and condemned by the court of Rome. "In the second year of his mission, Merolla was left alone at Sogno, by the death of the superior-general, whose place father Joseph Busseto went to fill at the convent of Agola. About the same time the Capuchin missionaries received a letter from Cardinal Cibo, in the name of the sacred college. It contained bitter complaints on the continuation of the sale of slaves, and urgent entreaties to put a stop to that abominable practice. But they saw little appearance of being able to execute the orders of the holy see, because the commerce of the country consists entirely in ivory and slaves."* All the efforts of the missionaries produced no other effect than the exclusion of the English from that traffic.

The earth would be a Paradise were the precepts of the Christian religion universally observed. It was Christianity that abolished slavery in the greatest part of Europe

* General History of Voyages by the Abbé Prevost, book 12 p. 1 Merolla. 1682.

It was this that, in France, wrested vast possessions out of the hands of the Jarles and Barons, and that destroyed a part of their inhuman rights by the terrors of another life. But the people likewise opposed another bulwark to tyranny, and this was the power of woman.

Our historians fail not to remark the influence possessed by some females during certain reigns, but never that of the sex in general. They write not the history of the nation, but the history of its princes. Women are not worthy of their notice unless they are invested with rank and titles. It was nevertheless, from this feeble portion of society, that Providence, from time to time called forth its principal defenders. I say nothing of those, who have repelled even by arms the invaders of their country, such as a Joan of Arc, to whom Rome and Greece would have erected altars; I allude to those who have protected the nation against internal enemies still more formidable than foreign foes; to such who are strong in their weakness, and who have nothing to fear because they have nothing to hope. From the spectre to the crook of the shepherdess, there is perhaps not a country in Europe where the sex is treated more unkindly by the laws than in France and in none it has more power. I believe it is the only kingdom in Europe where they are excluded from the throne. In my country a father can marry his daughters without giving them any other portion than a chaplet of roses; at his decease they have altogether only the portion of a younger child. This unjust law extends alike to the peasant and to the gentleman. In the other parts of the kingdom, if they are richer, they are not more happy. There they are rather sold than given in marriage. Out of one hundred young women who marry, not one is united to the object of her affections. Their condition in former times was still more wretched. Cæsar says in his commentaries:* "The husband had the power of life and

* Gallic war, book VI

death over his wife, as well as over his children. On the death of a man of noble birth, his relations assembled; if there was the slightest ground of suspicion against his wife, she was put to the torture like a slave; and if she wa found guilty, she was burned, having previously beer subjected to the most cruel torments." What is not little singular, as early as this period, and even before, they possessed unlimited power. On this subject the goo Plutarch thus expresses himself according to the versio of Amyat: "Before the Gauls had passed the Alps, and made themselves masters of that portion of Italy which they now inhabit, a great and voilent sedition took place among them and at length ended in a civil war. But their wives, just when the two armies were on the point of engaging, rushed between them, and taking up the cause of their dispute, they discussed the matter and decided between the parties with such equity and so much to the satisfaction of both, that mutual benevolence was restore and a cordial friendship took place not only between city and city, but likewise between family and family. From this time they have invariably consulted their wives on al affairs relative to war as well as peace, and have employed them to settle all quarrels and disputes with their neighbors and allies. Accordingly, in the treaty which they concluded with Hannibal, when he passed through Gaul, they stipulated, among other articles, that if the Gauls should have any complaints to make against the Carthaginians, they should be submitted to the decision of the Carthaginian officers and governors in Spain; if, on the contrary, the Carthaginians should have any cause of complaint against the Gauls, the point in dispute should be referred to the wives of the latter." To those who are not attentive to the re-action of human things, it will appear a difficult task to reconcile these two authorities. The power of the women proceeded from their oppression. The common people, as much oppressed as they, gave them their confidence, as they had given theirs to the peo-

ple. They resembled two wretched individuals, who had met and shared their misery in common. Their judgments were the more equitable as they had nothing either to gain or to lose. It is to the women that we must ascribe the spirit of gallantry, the levity, the gaiety, and above all the taste for raillery, which have, for ages, characterized our nation. With a mere song they have more than once made our tyrants tremble. Their ballads have sent many a banner into the field and put still more to flight. It is through them that ridicule has acquired such a powerful influence in France, that it has become the most terrible weapon which it it possible to employ, though it is only the weapon of the weak; because the women are the first to lay hold of it, and as, from national prejudice, their esteem is the first of blessings, it follows, that their contempt is the greatest of misfortunes.*

At length, Cardinal Richelieu having restored to the sovereign the legislative authority, he, by this measure, deprived the nobility of the power of injuring each other by civil wars; but he was never able to suppress among them the rage for duels because the root of this prejudice is in the people, and edicts have no power over its opinions when oppressed. The edict of a prince forbids a gentleman to give or accept a challenge, and the opinion of his valet compels him to meet his antagonist. The nobility have arrogated to themselves all the national honor, but the people determine its object and distribute its proportion. Louis XIV, however, restored to the people part of their natural liberty, by his very despotism.

* A provincial academy some years ago proposed the following question as the subject of the prize of St. Louis: "In what manner may female education contribute to render men better?"—I answered it, and committed two blunders from ignorance, not to mention the others. The first was my undertaking to write on such a subject after Fenelon's excellent work on the education of young women, and the second to argue for truth in an academy. The prize was not adjudged, and the subject was withdrawn. All that can be said to this question, is, that, in every country the women are indebted for their empire only to their virtues and to the interest they take in behalf of the miserable.

As he saw in the world scarcely any thing but himself, all the world appeared nearly equal in his eyes. He determined that all his subjects should be permitted to contribute towards the extension of his glory, and he rewarded them in proportion as their exertions had promoted this object. The desire of pleasing the prince reduced all ranks to a level. Multitudes of celebrated men, were, accordingly, seen, during his reign, to distinguish themselves in their respective ways. But the misfortunes of that great king, and perhaps his policy having obliged him to descend to the sale of employments, of which the fatal example had been set him by his predecessors, and which since his time, has been extended to the meanest offices, he by this step, completely stripped the nobility of their ancient preponderance, but he created in the nation a power much more dangerous, that of gold. This has obtained the ascendency over every other, and even triumphed over the influence of women.*

In the first place the nobility have preserved a portion of their privileges in the country, trades-people of some fortune do not choose to reside there, lest on the one hand, they should be exposed to insult, and lest they should be confounded, on the other, with the peasantry by paying a capitation-tax and drawing for the militia. They like rather to reside in the small towns where a multitude of employments enable them to live in listlessness and ignorance, than to till lands which degrade their cultivators. This is the reason that small landed estates are of little

* As most men are not shocked at abuses excepting in detail, because every thing that is great commands their respect, I shall here mention only some effects of venality among the lower classes of the people. All the inferior conditions naturally subordinate to others, have, in fact, become superior to them, merely because they are richer. Thus now-a-days the apothecary has the employing of the physician; the attorney of the counsellor; the tradesmen of the artist; the master-mason of the architect; the bookseller of the man of letters, &c. I shall say no more. It is obvious to what all this leads. From this venality alone must result the decline of all talents. It is indeed sufficiently perceptible, on comparing those of the present time, with those of the age of Louis XIV.

value, and that they are every year falling into the hands of the great proprietors. The rich who purchase them, escape the inconveniences to which they are subject, either, by their personal nobility, or by buying off the imposts under which they labored. I know well that some years since, a celebrated party loudly extolled the advantages of large estates, because, as it was asserted, they may be cultivated cheaper than small ones. But without taking into consideration whether they can sell corn cheaper or any of the other consequences of the net produce, which some have attempted to establish as the only object of agriculture, and even of morality, it is certain, that if a number of opulent families were every year to purchase the lands which lie conveniently for them, these bargains would soon become fatal to the state. I have often been astonished that there is no law in France to fix the limits of landed property. The Romans had censors, who, at first limited the extent of each person's possession to seven acres, as being sufficient for the subsistence of a family. By an acre they understood as much land as a yoke of oxen could plough in one day. As Rome advanced in luxury, it was fixed at five hundred; but this law, though so extremely indulgent was soon infringed, and its violation led to the destruction of the republic. "Extensive parks, and large domains," says Pliny, "have ruined our Italy, as well as the provinces which the Romans have conquered; for what occasioned the victories obtained in Africa by Nero (the consul) was, that six men were proprietors of almost one half of Numidia, when Nero defeated them." Plutarch informs us, that, in his time, during the reign of Trajan, it would have been impossible to raise three thousand men in all Greece which had formerly furnished such numerous armies, and that, in some parts, you might travel a whole day without meeting a human creature excepting a few straggling shepherds by the side of the road. The reason was, Greece, at this period, was divided among a few

great landed proprietors. Of this we have examples in every age, from the invasion of the Greek empire by the Turks, to the partition of Poland in our own times. Overgrown estates extinguish the spirit of patriotism both in those who possess all and in those who have nothing. "The sheaves of corn," said Xenophon, "inspire those by whom they are cultivated with the courage to defend them. They stand in the fields as a prize in the midst of the theatre for the conquerors."

Such is the danger to which excessive inequality of property exposes a state externally; let us now examine the mischief it produces internally. I have heard a person of unquestionable veracity relate, that an old comptroller-general, having retired into his native province purchased there a considerable estate. It was surrounded by about fifty small manors, yielding an income of between fifteen hundred and two thousand livres per annum. Their proprietors were respectable gentlemen, who had, through a succession of generations, supplied their country with brave officers and virtuous matrons. The comptroller-general desirous of encreasing his estate, invited them to his mansion, entertained them sumptuously, inspired them with a taste for the luxury of Paris, and concluded with offering twice the value of their estates if they were inclined to dispose of them. All accepted his offer, under the idea that they should double their income, and in the hope, not less fallacious to a country gentleman, of securing a powerful protector at court. But the difficulty of placing their money to advantage, a taste for expence inspired by sums such as they had never before seen in their coffers, and lastly, frequent journies to Paris, soon reduced to nothing the price of their little patrimonies. All these honourable families gradually disappeared; and thirty years afterwards, one of their descendants, who reckoned among his ancestors a long line of captains of cavalry and knights of St. Louis, was running on foot, over their former domains, soliciting the place of inspector of a salt-office to keep himself from starving.

Such is the mischief produced among the citizens by the excessive accumulation of property: the injury the land itself sustains is not inferior. I was, some years ago, in Normandy, at the house of a gentleman in affluent circumstances, who cultivated himself a considerable grass-farm situated on the declivity of a hill, the soil of which was very indifferent. I walked with him round his vast enclosure, till we came to an extensive space, overrun with moss, horse-tail, and thistles. Not a blade of good grass was to be seen. This soil was, in fact, both ferruginous and marshy. It had been intersected with several trenches to drain off the water, but all to no purpose; nothing could grow upon it. Immediately below, there was a succession of small farms, the soil of which was covered with rich verdure, planted with apple-trees laden with fruit, and surrounded with lofty alders. Cows were feeding in these orchards, while country-girls, were singing as they sat, spinning, at the doors of their houses. Their rural notes, repeated from distance to distance beneath these groves, communicated to this little hamlet a vivacity, which augmented still more the nakedness and dreary appearance of the heath where we were standing. I asked the proprietor why lands so contiguous should be of such different qualities. "They are of the same nature," replied he, "and on this very spot formerly stood small houses like those you see yonder. I purchased them, but to my loss. Their inhabitants having abundance of leisure, and a small extent of land to cultivate, kept it cleared of thistles and mosses, manured it, and it was covered with rich crops of grass. If they choose to plant, they dug holes, removed the stones, and filled the vacancies with good earth, which they brought from the bottom of the ditches and the sides of the high-road. Their trees took root and prospered. But all these operations would cost me a vast deal of time and expence. I should never make them pay me interest for my money." It should be observed that this bad farmer, but excellent gentleman, in

every sense of the word, was, at that very time, relieving by his charity the former tenants of those houses, who had no longer any means of subsistence. Here, then, is another instance of both lands and men rendered useless by the extension of property. It is not on vast domains, but into the arms of the industrious laborer that the Father of mankind pours forth the fruits of the earth.

It would be easy to demonstrate that large possessions are the principal causes of the multitude of paupers in the kingdom, by the very reason for which they are so highly extolled by many of our writers, that is, because they produce a great saving of agricultural labors. There are many places where proprietors have no employment for laborers during a great portion of the year; but I shall confine myself to the consideration of their wretchedness, which seems to increase with the riches of the district to which they belong.

The district of Caux is the most fertile country that I know in the world. Agriculture, on a large scale, is there practised in perfection. The depth of its soil, which in some places is not less than five or six feet, the manure, furnished by the bed of marl on which it is placed, and that of the marine plants on its shores, which are spread over the surface, concur to clothe it with the most superb vegetation. The corn, the trees, the cattle, the women, the men are more handsome and more vigorous than elsewhere: but as the laws of that province have assigned two thirds of the landed property to the first born in every family, you observe the greatest affluence on the one hand, and extreme indigence on the other. I was one day walking through this charming country. I admired its fields so well cultivated and so extensive that the eye cannot discover their limits. Their long ridges of corn, which follow the undulations of the plain, and are interrupted only by villages or mansions surrounded with lofty trees, exhibited the appearance of a sea of verdure, from which here and there an island rose above the horizon. It was the month of March and very

early in the morning. The wind blew extremely cold from the north-east. I perceived something red running across the fields, and making towards the high road, about a quarter of a league before me. I quickened my pace, and arrived in time to see two little girls in red jackets and wooden shoes, scrambling, with great difficulty, across the ditch which bounded the road. The eldest who was about six or seven years of age was crying bitterly. "My child," said I, "why do you cry, and whither are you going so early?"—"Sir," she replied, "my mother is ill. There is no broth to be had in our parish. We are going to the church, yonder, to another *curé* to ask him for some. I am crying because my little sister cannot walk any farther. While she spoke, she wiped her eyes with a piece of sacking, which served her for a petticoat. As she lifted the rag to her face, I could perceive that she had not even a shift. The misery of these children, so poor, in the midst of plains so fertile, pierced me to the heart; but the relief I was able to afford them was very small. I was myself going to see misery of a different kind.

The number of the indigent is so great in the best districts of this province, that it is equal to one fourth and sometimes to one third of the inhabitants of each parish, and it increases every year. These observations are founded on my own experience and on the testimony of several parish-ministers of veracity. Some landed proprietors order bread to be distributed every week to most of their peasantry to assist them in supporting life. Reflect, ye economists, that Normandy is the richest of our provinces and extend your calculations and your proportions to the rest of the kingdom! Ye may substitute financial morality for that of the gospel: for my part, I desire no other proof of the superiority of religion to the reasonings of philosophy, and of the goodness of the national heart to the splendid schemes of policy, than this, that, notwithstanding the defectiveness of our laws, and our errors of every kind, the state still continues to support itself, because Charity

and Humanity almost invariably step forward in aid of the government.

Picardy, Brittany, and other provinces are incomparably more to be pitied than Normandy. If there are in France, twenty-one millions of persons, as it is asserted, there must then be at least seven million of paupers. This proportion is not diminished in the cities, as may be seen by the number of foundlings in Paris, which amounts one year with another to six or seven thousand, whereas that of the other children not abandoned by their parents does not exceed fourteen or fifteen thousand. It is reasonable to suppose that a considerable proportion of the latter belong to indigent families. The others indeed, are in part the fruit of libertinism, but a laxity of morals is a proof and even a still stronger one of the misery of the people, since it compels them at the same time to renounce virtue and to stifle the first sentiments of Nature.

The spirit of finance has accumulated all these calamities on the people, by stripping them of most of the means of subsistence: but, what is still worse, it has corrupted their morals. They no longer esteem or commend any but those who are on the road to fortune. If they still entertain respect for talents and virtues, it is only because they regard them as means of acquiring riches. Even those who are denominated good company, have scarcely any other way of thinking. But I should be glad to know, if there can be any honest way of making a fortune, for a man without money, in a country where every thing is put up for sale. A man must at least intrigue, he must study to please a party and secure protectors and panegyrists: and for this purpose, he must be dishonest, he must bribe, flatter, deceive, adopt the passions of others, whether good or bad, in a word, commit himself in one way or other. I have seen persons attain to distinction in every kind of condition; but notwithstanding the praises bestowed on their merit, and though many of them actually possessed merit, I have no hesitation to declare, that I never saw

even the most honourable, raise himself and maintain his situation, but at the expence of some virtue.

Let us now consider the re-actions of these evils. The people, in general balance the vices of their oppressors by their own. They oppose corruption to corruption. From the womb of vulgar debauchery issues a prodigious multitude of buffoons, comedians, manufacturers of luxuries, nay even men of letters, who to flatter the rich and to raise themselves above indigence, extend licentiousness of manners and opinions to the extremities of Europe. In the class of the unmarried vulgar the most powerful bulwark is opposed to rank and wealth. As this is a very numerous body, and comprehends not only the youth of both sexes, who, with us, marry late, but likewise an infinite number of persons, who, from their condition, or the want of fortune, are, in like manner, deprived of the honors of society and the first pleasures of Nature, they constitute a formidable association, which has all reputations at its mercy and disturbs the peace of every family. It is such persons as these, who, for the price of a dinner, disseminate such a multitude of anecdotes either favorable or unfavorable, as, in every instance, regulate the public opinion. A rich man cannot have a handsome wife and enjoy her society in peace; they oblige him, under pain of ridicule, the severest of evils that can befal a Frenchman, to exhibit her at all public places, to adopt such manners as they think proper, however repugnant they may be to Nature, and however inconsistent with conjugal felicity. While their embodied army disposes of the reputation and the pleasures of the rich, two of their columns attack their fortune in front by two different ways. One endeavors to intimidate and the other to seduce them.

I shall not, in this place, extend my reflections to the power and the wealth which several religious orders have gradually acquired, but shall confine them to their numbers in general. There are politicians who assert, that France would become too populous, were there no convents in that

country. Are England and Holland, where no such institutions exist, overstocked with inhabitants? Besides, this assertion betrays an ignorance of the resources of Nature. The more inhabitants a country contains, the more productive it is. France would be capable of maintaining four times its present population, were it, like China, divided into a great number of small possessions. We must not form a judgment of its fertility from its vast domains. These immense, deserted districts yield only one crop in two years, or, at most, two crops in three. But with how many crops are small farms covered, and how many men do they support! Observe the plain of St. Gervais in the vicinity of Paris. The soil is, in general, but middling; and yet there is no species of vegetable common to our climate, which the industry of its cultivators does not make it produce. You behold at the same time corn-fields, meadows, culinary vegetables, beds of flowers, fruit-trees and forest-trees. I have there seen, in the same field, cherry-trees growing in the midst of potatoes, vines climbing up the cherry-trees, and lofty walnut-trees towering above the vines; four crops one above the other, in the earth, above the earth and in the air. No hedges separate the different possessions, any more than if it were still the golden age. Here a country-lad with a basket and a ladder exhibits the image of Vertumnus; there a young female, singing in some turning of the valley, to engage his attention, reminds you of Ponoma. If cruel prejudices have struck with sterility and solitude a great portion of France, and henceforth reserve it for a small number of proprietors, why is it, that instead of founders of orders, founders of colonies do not rise up among us, as among the Egyptians and the Greeks? Shall France never have an Inachus, a Danaus? Why do we compel the natives of Africa to cultivate our American possessions while our peasantry at home are in want of employment? Why do we not transport thither the most wretched of our poor by families; children, old men, lovers, cousins, nay the very churches

and saints of each villiage, that they may find again in those distant regions the loves and the illusions of thei. native land? Ah! had liberty and equality been invited to those countries, whose cultivation is so easy, the cottages of the new world would, at this day, have been preferable to the palaces of the old! Will another Arcadia never appear in some corner of the earth? When I imagined that I possessed some influence with men in power, I endeavoured to engage them in projects of this nature; but I never met with a single one who devoted his serious attention to the felicity of mankind. I have, at least, endeavoured to trace the plan to leave it to others; but the clouds of calamity have cast a gloom over my own life, and I was not permitted to enjoy happiness, even in a dream.

Some politicians have considered war itself as necessary to a state, because it takes off, they say, the superabundant population. In general, they manifest a great ignorance of Nature. Independent of the resources afforded by the division of landed property into small allotments, which every where multiply the fruits of the earth, we may be assured, that there is no country which has not the means of emigration at its command, especially since the discovery of the new world. There is not, besides, a single state, even among those which are the most populous, but what contains within its territory vast tracts of uncultivated lands. China and Bengal are, I believe, the countries of the globe, which contain the greatest number of inhabitants. China, however, has many deserts in the midst of its provinces because avarice attracts those who should cultivate them to the vicinity of the great rivers and to the cities for the convenience of commerce. Many enlightened travellers have made this observation. Hear what the honest Dutchman Walter Schouten says concerning the deserts of Bengal: "Towards the south, along the sea-coast, at the mouth of the Ganges, there is a very large tract which is desert and uncultivated, from the indolence of the

inhabitants, and likewise from the fear they are under of the incursions of the natives of Arracan, and of the crocodiles and other monsters which devour men, and live in those deserts, frequenting the banks of the rivers and streams, the morasses and the caverns." Trifling obstacles indeed for a nation, in which fathers sometimes sell their children for want of the means of supporting them. Bernier, the physician, likewise remarks, in his Travels through the Mogul Empire, that he saw a great number of very fertile and desert islands at the mouth of the Ganges.

To the great number of bachelors must in general be ascribed that of prostitutes, which, in every country, is proportionate to the other. This evil is likewise the effect of a natural re-action. The two sexes are born and die in equal numbers, every man comes into the world and leaves it with his female. Every man therefore who devotes himself to celibacy, must at the same time doom a female to a single life. The ecclesiastical order robs great part of the sex of their husbands, and the social order deprives them of the means of subsistence. Our manufactures and our machines, so ingenious, have taken out of their hands almost all the arts by which they earned a subsistence. I say nothing of those for weaving stockings, tapestry and stuffs, employments in which so many mothers of families were formerly engaged, but now wholly engrossed by people bred to the business; but we have tailors, shoe-makers, and hair-dressers for ladies. We have men-milliners, dealers in linen, gauze, muslin, artificial flowers. Men are not ashamed to seize for themselves the easiest occupations, and to leave to the other sex the most laborious. There are female dealers in cattle and pigs, who run about to fairs on horseback; there venders of bricks, who navigate boats, quite embrowned by the sun, and others who work in the quarries. We see multitudes of women in Paris bearing on their shoulders enormous bales of linen, carrying water, or blacking shoes on the quays, while others are yoked, like horses, to little carts. Thus the sexes

unsex themselves, the men dwindle into women, and the women harden into men. A great number of them indeed find it more convenient to turn their charms to account than their strength. But what mischief is not daily produced by these profligate females! What conjugal infidelity, what domestic robberies, what quarrels, assaults, duels do they not occasion! No sooner has night spread her sable mantle than they inundate all the streets; they take possession of all the public walks, and watch at every corner for their prey. Others known by the name of *kept mistresses*—a name to which the vulgar has already begun to attach some consideration, roll along to the theatres in splendid equipages. They preside at the balls and the festivities of the better sort of trades-people. It is partly for them, that a multitude of vaulted Egyptian palaces rise in the midst of English gardens in the suburbs. There is not one of them who is not engaged in destroying a fortune. Thus the Almighty punishes the oppressors of a people by the hands of the oppressed. While the rich are dreaming of enjoying their substance in peace, men sprung from the very dregs of the people, plunder them in their turn, by the inquietudes of opinion; if they escape these, they fall into the hands of abandoned women: and if both should happen to miss the fathers, they make sure of indemnifying themselves by the children.

Attempts were made, some years ago, to encourage virtue, in our poor country-girls by feasts, called *Rose-feasts*; for as to those who are rich, and our city females, the respect they owe to their fortune forbids them to put themselves on a level with peasants, even at the foot of the altar. But ye, who bestow crowns on virtue, are ye not afraid of tarnishing her purity? Know ye not that, among nations who truly honoured virtue, only the prince or the country presumed to confer the crown? The pro-consul Apronius refused to give the civic crown to a soldier who had merited it; he considered this privilege as belonging exclusively to the emperor. Tiberius bestowed it, regretting

that Apronius had not done it, in quality of pro-consul. Have you not heard how highly the Romans honoured virginity? They decreed that the maces of the pretors should be carried before the vestals. We have already seen that their presence alone released the criminal proceeding to execution, provided they affirmed that they did not pass that way for the purpose. They had a particular place allotted them at public festivals, and many empresses demanded, as the highest of honors, the privilege of sitting among them. And citizens of Paris crown our rustic vestals!* Great and generous effort! They bestow in the country, a garland of roses on indigent virtue, and in the city they cover vice with a profusion of diamonds.

On the other hand, the punishments of guilt appear to me to be as injudiciously allotted as the rewards of virtue. We hear nothing in our streets but the cry of *sentence of condemnation*, and never that of *sentence of reward*. Crimes are restrained by infamous punishments. A simple mark of disgrace, instead of correcting a criminal, plunges him perhaps still deeper into guilt, and often drives a whole family into vicious courses. Where can a man find refuge who has been whipped, branded, and excluded from society? Necessity made him a robber; rage will convert him into an assassin. His relations, on whom he has brought disgrace, leave their country and become vagabonds. His sisters abandon themselves to prostitution. These effects of the fear with which the executioner inspires the people are considered as prejudices which are salutary to them. In my opinion, however, they are productive of the greatest mischief. The people extend them to the most indifferent actions and thus aggravate their own wretchedness. Of this I witnessed an example in a vessel in which I was a passenger, on my return from the Isle of France. I observed that none of the sailors would

* They even condescend to suffer them to eat with them, as may be seen in the journals of those times which expressed the highest rapture on the occasion.

eat with the cook of the ship, and that they scarcely deigned even to speak to him. I enquired the reason of this conduct of the captain. He told me, that about six months before, being at Pegu, he had left this man on shore to take charge of a warehouse which the natives had lent him. These people, when night came on, locked the door, and took the key away with them. The cook, who was within, being unable to go out to disburden Nature, was under the necessity of easing himself in a corner. Unfortunately this store-house was likewise a temple. In the morning, the natives opened the door, but perceiving that the place was polluted, they fell, with loud shouts on the poor keeper, bound him and delivered him into the hands of the executioners, who would have hanged him, had not the captain of the ship, seconded by a Portuguese bishop, and the brother of the king, hastened to procure his release. From that moment the sailors looked upon their countryman as dishonored, from having, as they alledged, passed through the hands of the executioner. This prejudice existed neither among the Greeks nor the Romans. It is not to be found among the Turks, the Russians and the Chinese. It proceeds not from a sense of honor; nor even from the shame of guilt; it is attached merely to the nature of the punishment. A family is not dishonored if one of its members is beheaded for treason and perfidy, or shot for desertion. The degraded people despise only what is peculiar to themselves, and shew no pity in their decisions, because they are miserable. . .

Thus the wretchedness of the people is the principal source of all our maladies, physical as well as moral. There is another, not less fertile in evils, I mean the education of children. This portion of political economy engaged, in ancient times, the attention of the greatest legislators. The Persians, the Egyptians and the Chinese made it the basis of their government. 'Twas on this that Lycurgus laid the foundations of his republic. It may even be affirmed that where no national education is established,

there no durable legislation exists. With us, education has no reference to the constitution of the state. Our most celebrated writers, such as Montaigne, Fenelon, J. J. Rousseau, were deeply sensible of the defects of our police in this respect; but despairing, perhaps, of effecting a reformation, they preferred proposing plans of private and domestic education, to repairing the old system, and adapting it to all the inconsistencies of the present state of society. For my part, as I am tracing out evils to their source, only with a view of exculpating Nature, and in the hope that some favored genius may one day be enabled to apply a remedy, I feel inclined to examine the influence of education on our individual happiness and on that of the country in general.

Man is the only sensible being who forms his reason by continual observation. His education begins with his life and ends only with his death. His days would pass away in perpetual uncertainty, unless the novelty of objects and the flexibility of his brain in infancy, gave to the impressions of his early years a character not to be effaced: at that period are formed the tastes and observations which influence his whole life. His first affections are likewise the last. They accompany him amid all the events with which his days are chequered; they re-appear in old age, and revive the recollection of infancy with still more force than even those of mature age. Early habits have an influence even over animals, and so powerful as to destroy in them their natural instinct. Of this Lycurgus exhibited a striking example to the Lacedæmonians, in two hounds of the same litter, in one of which education had completely triumphed over Nature. But still stronger instances might be adduced from among men, in whom early habits sometimes triumphed even over ambition. History contains many of these examples; but I shall produce one which is not to be found in its pages, and which is apparently of no great importance; but it is highly interesting to myself, because it brings to my recollection men who were once dear to me

When I was in the Russian service, I frequently dined at the table of his excellency M. de Villebois* grand-master of the ordnance, and general of the corps of artillery to which I belonged. I observed on all these occasions, something, but what I could not tell, of a grey color and similar in form to small pebbles, was brought him on plate. He ate of this dish very heartily, without offering it to any one, though his entertainments were in the most elegant style, and there was not a single dish besides that was not presented to the lowest of his guests. He, one day, perceived me looking attentively at his favorite mess, and asked me, with a smile, if I wished to taste it. I accepted his offer and found that it consisted of small lumps of curdled milk salted and intermixed with aniseeds: but so hard and tough that I had the greatest difficulty to force my teeth through them, but to swallow them was

* Nicholas de Villebois was born in Livonia, of a French family originally from Brittany. At the battle of Frankfurt, he turned the victory in favor of the Russians, by charging the Prussians at the head of a regiment of fusileers, of which he was then colonel. This action, together with his personal merit, procured him the blue ribbon of St. Andrew, and soon afterwards the place of grand-master of the ordnance, which he held at the time of my arrival in Russia. Though his influence was then on the decline, he introduced me into the service of Catherine II. and did me the honor of presenting me to her, as one of the officers of his corps of artillery. He was making arrangements in concert with general Daniel Bosquet, commander of the corps of engineers, for my promotion; they both made every exertion in their power to retain me in the service, by studying in every possible way to render it agreeable, and by the offer of situations, both honorable and advantageous. But my ardent love of my country which I had previously served, and the desire of rendering it farther services, which was cherished with vain hopes, by men of very high character, induced me to persist in demanding my dismission, which I obtained in 1763 with the rank of captain. On leaving Russia, I made an attempt to serve my country at my own expence in Poland, by joining the party whose cause France had espoused. I was there involved in great dangers, having been taken prisoner by the Polish party in the interest of Russia. On my return to Paris, I presented to the minister for foreign affairs memorials relative to the state of the north, in which I predicted the future partition of Poland by the contiguous powers. This partition actually took place a few years afterwards. Since that period I have endeavoured to deserve well of my country by my services, as well military, in the islands where I was captain of the royal engineers, as literary in France and I may likewise add by my conduct, but I have not hitherto experienced in my fortune that she approved of the sacrifices of every kind that I made to her interest.

totally impossible. "These," said the grand-master to me, "are the cheeses of my native country. It is a taste which I acquired in my childhood. I was accustomed, among our peasants, to this coarse preparation from milk. When I am travelling, and am at a distance from any town, on approaching a village, I send my servants and my carriage before; and it then affords me the greatest pleasure to go unattended, and muffled up in my cloak, into the house of the first peasant and to eat a pot of curdled milk with brown bread. In my last journey into Livonia, I met with an adventure which highly diverted me. While I was breakfasting in this manner, a man entered singing, and carrying a bundle on his shoulder. He seated himself beside me, and desired the landlord to give him a mess like mine. I asked this traveller to gay whence he came and to what part he was going. 'I am a sailor,' replied he, 'and have just arrived from India. I landed at Riga, and am returning to Herland, my native country, where I have not been these three years. I shall stay there till I have spent these hundred crowns,' continued he, shewing me a leathern bag and rattling the money. I asked him several questions concerning the countries he had seen, and he answered me with much good sense. 'But,' said I, 'when you have spent your hundred crowns, what will you do then?' 'I shall return to Holland,' said he, 'and embark again for India, to earn more, that I may again return and amuse myself in my native country, Herland,* in Franconia. The good humor and thoughtlessness of the man diverted me exceedingly," continued the grand-master. "In truth I envied his situation."

Wise nature, in giving such power to the habits of early age, has designed that our happiness should depend on those who are most concerned in promoting it, our parents, for, on the affections which they then inspire

* I believe it would puzzle a better geographer than myself to point out the situation of such a district or place as that mentioned by the author. In my opinion the place here intended must be Erlangen a town in the principality of Anspach-Bayreuth in Franconia. T.

depends the love which we shall one day return them. But, with us, as soon as a child is born, he is transferred to the care of a mercenary nurse. The first bond which should attach him to his parents is broken before it is formed. The day will perhaps come, when he will see their funeral procession leave the paternal dwelling, with as much indifference as they beheld the departure of his cradle. He is recalled, it is true, at an age, when the graces, when innocence and the necessity of having an object of affection, should fix him there for ever. But no sooner has he tasted their sweets, than he is doomed to endure the pain arising from the privation of them. He is sent to a public seminary, or to a boarding-school. There he will shed tears, which no maternal hand will wipe away. There he will form friendships with strangers, embittered by regret or repentance; there he will extinguish the natural affections, the love to brother, sister, father, mother, which are the most powerful and the most pleasing chains by which Nature attaches us to our country.

After this first outrage committed on his youthful heart, his reason is subjected to others equally violent. His tender memory is burthened with ablatives and conjunctions and conjugations. The flower of human life is sacrificed to the metaphysics of a dead language. What Frenchman could endure the torment of learning his own in this manner? And if there have been those who exercised this laborious patience, did they speak better than the rest of their countrymen? Montaigne, whose writings are so replete with the ancient beauties of the Latin tongue, and who has given such energy to our own, congratulates himself "on having never known what vocatives meant." To learn to speak by the rules of grammar, is the same thing as to learn to walk by the laws of equilibrium. It is practice that teaches the grammar of a language, and the passions instruct us in the rhetoric of it. It is only at the age and in the situations where they expand, that we perceive beauties in Virgil and in Horace, which our most

celebrated college translators never dreamt of. I recollect that when I was at school, I was for a long time bewildered, like other boys, in a chaos of barbarous terms, and that when I discovered in my authors any ray of genius which illumined my understanding, or any sentiment that found its way to my heart, I kissed my book for joy. I was astonished to find common sense in the ancients. I imagined that there was as much difference between their reason and mine as there was in the construction of the two languages. I have known several of my school-fellows so disgusted with these college explanations of Latin authors, that, long after they had left the seminary, they could not bear to hear their names mentioned. But when they were formed by acquaintance with the world, and with the passions, they were then sensible of their beauties, and the study of them became their highest delight. It is thus that children are rendered stupid, that the fire and activity natural to their age, are repressed by a life melancholy, sedentary and speculative, which ingrafts on the constitution diseases without number. But these after all are nothing more than langnor and physical evils. Vices are inculcated on their youthful minds; they are inspired with ambition under the disguise of emulation.

Of the two passions, which are the ruling principles of the human heart, love and ambition, the latter is by far the most durable and the most dangerous. Ambition is the last that expires in the aged, and it is the first that is kindled in the bosom of youth. It would be much better to instruct them to direct their affections to some object worthy of being loved. Most of them are destined at some time or other to feel the power of the tender passion. Nature has, besides, made it the most powerful bond of society. If their age, or rather, if our mercenary habits forbid it, their affections might be directed into the channel of friendship, and their instructors might form among them, like Plato in his republic or Pelopidas at Thebes, battalions of friends ever ready to devote their lives to the

service of their country.* But ambition never raises itself excepting at the expence of another. Call it by whatever specious name you please, still it is the enemy of all virtue. It is the source of the most dangerous vices, of jealousy, of hatred, of intolerance, of cruelty; for each seeks to gratify it in his own way. It is forbidden to all men by Nature and by Religion, and to most subjects by the government under which they live. In our colleges a scholar is brought up to empire, who is destined, for the remainder of his life to retail pepper. There our youth, the hopes of the nation are exercised, for seven years, in the art of making verses, in learning to be the first in amplification and declamation. For one who succeeds in these futile pursuits how many thousands lose both their health and their Latin!

It is emulation, we are told, that awakens talents. It would be easy to prove that the most celebrated writers, in every department, were not brought up at college, from Homer, who understood no language but his own, to J. J. Rousseau, who had a very imperfect knowledge of Latin. How many students have made a brilliant figure in the routine of the classes, who have been totally eclipsed in the vast sphere of literature! Italy is full of colleges and academies, but can she at this day boast of one celebrated name? Do we not there see, on the contrary, talents distracted by ill-assorted societies, by jealousies, by cabals,

* *Divide et impera*, was an expression used I believe by Machiavel. Judge of the excellence of this maxim from the miserable condition of his native country, where it has been reduced to practice.

Children, at Sparta, were taught only to obey, to love virtue, to love their country, and to live in the most intimate union. Among the other nations of Greece, education was arbitrary; it was blended with many exercises of eloquence, of wrestling, of running, of Pythian, Olympic and Isthmian prizes. These frivolities cherished partialities. Lacedæmon gave law to them all; and while the others on going to battle for their country, required the stimulus of pay, of harangues, of trumpets, and of fifes, to rouse their courage, it was necessary, on the contrary, to repress that of the Lacedæmonians. They marched to battle without pay, without orations, accompanied by the sound of flutes, and singing in concert the hymn of the twin brothers Castor and Pollux.

by intrigues, and by all the restlessness, languishing and perverted? I think I can perceive another cause of their decline: it is, that there nothing is studied but methods, or what in the language of painting is called manner. This study, by fixing us in the track of a master, estranges us from Nature, which is the source of all talents. Observe what are the arts brought to the highest perfection in France; you will see that they are those for which there are no public schools, no prizes, no academies; such as those of milliners, jewellers, hair-dressers, cooks, &c. We have, it is true, men of high celebrity in the liberal arts and in the sciences, but these had acquired their talents before their admission into the academies. Can it, besides, be affirmed that they are equal to those of preceding ages, who appeared before academies existed? After all, if talents were found in the colleges, they would not be less prejudicial to the nation; for it is of greater importance to possess men of virtue than men of talents, and happy men than renowned characters. A deceitful lustre covers the vices of those who obtain renown in our schools. But among the multitude consigned to obscurity, secret jealousies, malicious whispers, base flattery, and all the vices of a negative ambition are already in fermentation, and are ready to diffuse themselves with it over the world.

While pains are thus taken to render the hearts of children depraved, their understandings are perverted. These two evils proceed hand in hand. In the first place they are taught to be inconsistent. Their instructor informs them that Jupiter, Minerva, Apollo are deities; the parish-minister tells them that they are demons. The former assures them that Virgil, who has so admirably treated of Providence is, at least, in the Elysian fields, and that he enjoys, in this world, the esteem of all good men: the latter declares that this same Virgil was a Pagan and therefore doomed to eternal perdition. The scriptures again hold a different language; they teach them to be the last, whereas the college urges them to be the first: virtue

commands them to descend, education to rise. But what is the most extraordinary, these contradictions, especially in the provinces, frequently proceed from the same mouth, and the same ecclesiastic teaches the classics in the morning and the catechism at night. I am well aware how they are arranged in the head of the master; but they must produce a strange confusion in that of the scholar, who is not paid for hearing as the other is for retailing them. It is much worse when subjects of terror are employed in cases where they ought only to find consolation; when, in the age of innocence the maledictions of Jesus Christ pronounced against the Pharisees, the doctors, and the other tyrants of the Jewish people are applied to them; or their tender organs are shocked by the images of monsters so common in our churches. I knew a young man, who, in his infancy, was so terrified by the dragon of St. Margaret, with which his preceptor threatened him in the village-church, that he fell ill with the fright, and fancied that he saw the monster constantly at his pillow ready to devour him. To pacify him, his father was obliged to appear with his sword drawn and to pretend that he had killed the dragon. Thus, as usual, one error was expelled by another. When he grew up, the first use he made of his reason was, to reflect that those whose duty it was to form his understanding had twice misled him.

After having exalted a boy above his equals by the title of emperor, and even above the whole human race by that of Son of the Church, he is degraded by cruel and ignominious punishments. "Among other things," says Montaigne,* "that part of the police of our schools has always displeased me. The error would perhaps have been much less mischievous had the extreme of indulgence been adopted. It is the real gaol of captive youth. They are debauched by being punished before they are already depraved. If you pass during school-hours, you hear no-

* Essays, book I. chap. 25.

thing but the cries of children undergoing chastisement, and masters intoxicated with rage. What a method of inspiring with the love of learning, those tender, timid minds, to drive them to it with surly looks and hands armed with rods. Unjust and pernicious measure! Add to this, what Quintilian has very justly remarked on this subject, that this imperious authority is productive of dangerous consequences, particularly from our mode of chastisement. How much more decent would their school rooms appear strewed with flowers and verdant sprigs than with the fragments of bloody rods! I would there place representations of Joy, Mirth, Flora and the Graces, as did the philosopher Speusyppus in his school. Where should their improvement be expected, but where their pleasure is?"* I have seen children at school, ready to swoon with pain, receive on their little hands a dozen strokes. In consequence of this punishment I have seen the skin separated from the ends of their fingers and the bare flesh exposed. What shall we say of such infamous punishments, which exercise an influence so pernicious both on the manners of the pupil and on those of the preceptor, as might be proved by a thousand examples? It is impossible to enter into any detail on this subject without putting modesty to the blush. Yet it is priests who employ them. They rest on a passage of Solomon, in which it is said: "He that spareth the rod hateth the child." But how do we know that the Jews inflicted this punishment in our way? The Turks, who have preserved most of the customs of that people, hold it in detestation. It was diffused over Europe only by the corruption of the Greeks of the Eastern empire, and it was introduced there

* Michael Montaigne is likewise one of those men who were not educated in colleges, or at least, he continued there but a very short time. He was instructed without corporal chastisement and without emulation beneath the paternal roof, by the most tender of fathers and by preceptors whose names he has carefully preserved in his writings. By an education, so opposite to ours he became one of the best and one of the most learned men in the nation.

by monks. If the Jews actually employed it, how do we know but that their ferocity proceeded from this part of their education? It must likewise be considered, that there are in the Old Testament many precepts never intended for us. We find in it passages very difficult to explain, dangerous examples, impracticable laws. In Leviticus, for example, the use of swine's flesh is prohibited. It is declared to be a crime worthy of death to work on the sabbath day. St. Paul, in his epistle to the Galatians says positively that the law of Moses is a law of servitude; he compares it to the slave Hagar, repudiated by Abraham. Whatever respect we may owe to the writings of Solomon and the laws of Moses, we are not their disciples, but the disciples of him who said, "Suffer little children to come unto me," who blessed them and declared that, in order to enter into the kingdom of heaven, it is necessary to become like them.

Our children, depraved by the vices of modern education, become inconsistent, knavish, hypocritical, envious, ugly and wicked. In proportion as they increase in age, they likewise increase in malignity and the spirit of contradiction. There is not a single school-boy who knows any thing of the laws of his country; but some of them have heard of those of the twelve tables. None of them can tell how modern wars are conducted, but many are able to give some account of those of the Greeks and Romans. There is not one of them who does not know that single combat is prohibited, and many of them go into the fencing-schools, where nothing is taught but to fight duels. They go thither, we are told to acquire a graceful carriage and to learn to walk; as if we were obliged to walk in the positions of *tierce* and *quarte*, and the attitude of a citizen ought to be that of a gladiator! Others destined for more peaceful functions go to school to learn the art of disputation. Truth, we are told, is elicited by the collision of opinions. For my part, I should not know Truth, were I to meet her in a dispute. I should suspect

myself to be dazzled either by my own passion, or by that of another. From disputes have arisen sophisms, heresies, paradoxes, and errors of every kind. Truth never shews her face before tyrants; and every man who disputes strives to make himself a tyrant. The light of truth has no resemblance to the fatal coruscation of the thunder, engendered by the war of the elements, but to the brightness of the sun, which is perfectly pure only when the face of heaven is without a cloud.

I shall not follow our youth into the world, where the greatest merits of ancient times can be of no service to them. What should they do with strong republican sentiments in a monarchy, and with those of disinterestedness in a country where every thing is put up for sale? Of what service would even the stoic philosophy of Diogenes be to them in cities where beggars are taken up and confined? Youth would be very unhappy, if they had retained only that fear of blame and that love of praise by which their studies were directed. Guided continually by the opinion of another, and having no steady principle within their own minds, the silliest woman will rule over them with more unlimited power than a professor. But, we may say what we please, the colleges will always be full. I should, however, wish to see children released from that protracted misery by which they are depraved at the happiest and the most amiable period of life, and which has afterwards so much influence on their characters. Man is born good. Society makes villians and education prepares them.

As my testimony is not sufficient to establish an assertion so important, I shall produce several, which are not liable to suspicion, and which I take at random from the works of ecclesiastics, not in conformity to their opinions, which are regulated by their condition, but the result of their own experience, which totally deranges all their theory on this subject. The following is extracted from Father Claude d'Abbeville, a Capuchin missionary. He is speak-

ing of the children of the natives of the islands of Maragnan, on the coast of Brasil; where we laid the foundation of a colony, that experienced the fate of so many others, ruined by our inconstancy and by our divisions, the ordinary consequences of our education. "I know not whether it proceeds from the great love which parents bear to their children, that they never say a word which can give them any uneasiness, but leave them at liberty to do whatever they please, and to take their own way, without apprehension of the slightest reproof. It is therefore a circumstance worthy of admiration, and has (not without reason) excited the astonishment of many, that the children seldom do any thing to displease their parents; on the contrary they strive to do every thing which they know or imagine to be agreeable to them.*" He then presents the most favorable delineation of their qualities physical and moral. His testimony is confirmed by Jean de Lery, as far as it relates to the Brasilians, whose manners are the same, and who are in the vicinity of that island. Hear another account, that of Antoine Biet, superior of the missionary priests, who, in 1652, went over to Cayenne, another colony which we lost from the same causes and which has since been indifferently re-established. It relates to the children of a tribe of savages called Galibis.† "The mother makes a particular point of nursing her child. No such thing is known among them, as to give out their children to be nursed by another. They love their children to distraction. They wash them every day in a fountain or in a river. They do not swaddle them, but lay them on a little bed of cotton made expressly for the purpose. They always leave them quite naked; it is wonderful to see how they thrive; some are able to walk alone at the age of nine or ten months. When they grow

* History of the mission of the Capuchin fathers in the Island of Maragnan, chap. 47.

† Travels in the equinoctial regions, book III. p. 390

older if they cannot walk, they crawl about on their hands and feet. These people are passionately fond of their children. They never strike or correct them, but permit them to live in perfect liberty; and the children on their part never do any thing that is displeasing to their parents. They are astonished when they see any of our people chastising their children." I shall subjoin a third extract from the work of a Jesuit. I allude to father Charlevoix a man of the most extensive knowledge. It is taken from his voyage to New Orleans, another colony which we have suffered to dwindle away by our divisions, the consequences of our moral constitution, and of our education. He is speaking of the children of the savages of North America in general. "Sometimes to correct their faults, they employ prayers and tears but never menaces—A mother who sees her daughter behave improperly begins to weep. The daughter asks her the reason and she makes no other reply than the words: 'You dishonor me.' It is seldom that this mode of reproof fails of producing the effect intended. However since they have had more intercourse with the French, some of them have begun to chastise their children, but this practice has been adopted only by those who are Christians, or have settled in the colony. The severest punishment usually employed by the savages to correct their children, is to throw a little water in their faces. Girls have been known to hang themselves for having received a very slight reproof from their mothers, or for having had a few drops of water sprinkled over their faces; previously apprizing them of their intention, in these words, "You shall no longer have a daughter."* It is not a little amusing to observe the embarrassment of the author, to reconcile his prejudices as an European with his remarks as a traveller, which produces perpetual contradiction in the course of his work. It would appear, he says, that a childhood so free from control, must be

* Historical Journal of North America, letter 23, August, 1721

succeeded by a youth very turbulent and very corrupted. He admits that reason guides them at an earlier period than other men, but he ascribes the cause of this to their temperament which, he says, is more tranquil. He does not recollect the pathetic pictures he has himself drawn of the scenes presented by their passions, when they expand in the bosom of peace in the assemblies of the nations, where their harangues far surpass in justness and sublimity of imagery those of our orators: and amid the horrors of war, when surrounded with fire and faggots they brave the utmost fury of their enemies. He does not choose to see that it is our European education which corrupts our natural disposition, though he acknowledges, in another place, that these same savages, brought up after our manner, become more wicked than the others. There are passages in which he launches out into the most affecting panegyric on their morals, their excellent qualities and their happy life. He even seems to envy their condition. Time will not permit me to produce various passages, which may be read in the work I have quoted above, nor a multitude of other testimonies relative to the different nations of Asia, among whom we find, that a mild education has a striking influence on the physical and moral beauty of men, and that it is, in every political constitution, the most powerful bond of union among the members of states. I shall conclude these foreign authorities by a trait, which J. J. Rousseau could not have given with impunity, and which is extracted word for word, from the work of a Dominican; I mean the pleasing history of the Antilles, by father du Tertre, a man of exquisite taste, good sense and humanity. Speaking of the Caraibs whose education resembles that of the people I have been describing, he says: "At the mention of the word savage, most people figure to themselves a species of men barbarous, cruel, inhuman, destitute of reason, deformed, tall as giants, shaggy as bears; in a word rather monsters than rational beings: though, in truth our savages are savages only in name, like the plants

and the fruits produced by Nature in the forests and deserts, which though we call them wild or savage, possess the the real virtues and properties in their full force and vigor, which we frequently corrupt by art, and diminish by transplantation into our gardens. It is my intention, he afterwards adds, to demonstrate in this treatise, that the savage of these islands are the most contented, the most happy, the least vicious, the most sociable, the least deformed and the least tormented by disease of any nation in the world."

If we examine among ourselves the history of the life of a villian, we shall invariably find that his infancy was very miserable. Wherever I have seen children unhappy, there I have always observed that they were ugly and wicked; wherever I have found them happy, there they were handsome and good. In Holland and in Flanders where they are brought up in the gentlest manner, their beauty is particularly remarkable. It was among them that the celebrated sculptor François Flamand found his charming models of children, and Rubens the freshness of coloring that distinguishes those of his pictures. You never hear them, as in our towns, uttering piercing cries; still less do you hear them threatened with the rod by their mothers and their nurses, as among us.

They are not gay but they are content. Their countenances display an air of tranquillity and of happiness that is enchanting, and infinitely more interesting than the noisy mirth of our young people, when they are not under the eye of their fathers or of their teachers. This tranlife. I never saw any country where parents manifested quillity is diffused over all their actions, and is the source of that happy serenity which characterizes them through such affection for their children. The latter, in their turn, repay them in old age, that indulgence with which they were treated in helpless infancy. By bonds so endearing these people are so powerfully attached to their native land, that very few of them are known to settle in foreign countries. With us, on the contrary, fathers would rather

see their children sprightly than good, because in a constitution of ambitious society, spirit elevates a man to the head of a party, but goodness makes him a dupe. They have collections of epigrams composed by their children; but wit being only the perception of the relations of society, children scarcely ever have any but what is borrowed Wit itself in them is frequently the proof of a miserable existence, as may be remarked in the school-boys of our towns, who are commonly more sprightly than the children of the peasantry, and in those who have some natural defect, as the lame, the hunch-backed, who, in this respect, are still more precocious than the others. But in general they are extremely forward in point of sensibility; and for this reason those are still more to blame, who degrade them at an age when they frequently feel more delicately than men. I shall produce some instances which demonstrate, that, notwithstanding the errors of our political constitutions, there still exist, in some families, good natural qualities or distinguished virtues, which allow the happy affections of infancy the liberty of expanding.

I was at Dresden in 1765, and happened to go to the Court Theatre. The piece performed was *the Father*. The electress entered with one of her daughters, who was about five or six years of age. An officer of the Saxon guards, in whose company I was, said to me: "That child will interest you as much as the play." In fact, as soon as she had seated herself, she placed both her hands on the front of the box, fixed her eyes on the stage, and with open mouth remained immoveably attentive to the performers. It was truly affecting to observe the different passions expressed by them reflected in her face, as in a mirror. You beheld anxiety, surprise, melancholy, sorrow, successively depicted in it; at length, the interest augmenting with every scene, the tears began to stream down her little cheeks, accompanied by such profound sighs and sobs, that at last it became necessary to carry her out of the box, for fear she should be stifled. My neighbour informed me,

that whenever this young princess attended the representation of a pathetic piece, she was obliged to retire before the catastrophe.

I have witnessed in the children of the common people, instances of sensibility still more affecting, because they were not produced by any theatrical effect. Walking some years ago in the Pré Saint Gervais, at the beginning of winter, I saw a poor woman lying on the ground, occupied in weeding a bed of sorrel: near her stood a little girl, six years old at most, motionless and quite purple with cold. I addressed the woman who appeared to be ill, and enquired the nature of her malady. "Sir," said she to me, "for three months past I have suffered severely from the rheumatism; but my disease gives me less pain than that child. She will never leave me. If I say to her: 'You are quite benumbed, go home and warm yourself,' she replies: 'Alas, mother, if I leave you, your complaint will perhaps be worse!'

On another occasion, being at Marly, I strolled among the groves of that magnificent park, and went to see that charming group of children, feeding with vine-leaves and grapes a she-goat which seems to be playing with them. At a little distance is a covered pavilion, where, in fine weather, Louis XV. sometimes went to enjoy a collation. As the weather was showery, I stepped in for a moment to shelter myself. I there found three children, much more interesting than those of marble. They were two little girls, extremely handsome, who were very busily employed in picking up round the arbor sticks of dry wood, which they put into a basket that stood on the king's table, while a little boy in ragged clothes and very meagre, was greedily devouring in a corner a morsel of bread. I asked the eldest, about eight or nine years of age, what she intended to do with the wood which she was so busily collecting "Look, Sir," replied she, at that little boy; he is very unhappy. He has a step-mother, who sends him out all day long to pick up wood. When he carries none home he

as beaten; and when he has gathered some, the Swiss at the park-gate takes it from him, and applies it to his own use. He is dying of hunger, and we have given him our breakfast." With these words, she and her companion, having filled the little basket, helped him up with it on his shoulder, and ran before the unhappy child to the gate of the park, to see if he would be permitted to pass unmolested.

Foolish instructors! human nature, you complain, is corrupted; but it is you who corrupt it by contradictions, unprofitable studies, dangerous ambition and shameful chastisements; but, by an equitable reaction of divine justice, this feeble and unfortunate generation will one day repay its oppressors in jealousies, in disputes, in apathies and in oppositions of taste, all the misery they have inflicted on it.

I have explained, to the best of my ability, the causes and the reactions of our evils, to vindicate Nature from the charge of having produced them. I purpose, at the conclusion of this work to present remedies and palliatives for them. They will undoubtedly be nothing more than vain speculations; but if any minister should one day attempt to render the nation happy at home and powerful abroad, I can predict that it will not be effected by plans of economy, or by political alliances, but by reforming its manners and its system of education. He will not be able to effect this revolution by punishments and rewards, but by imitating the processes of Nature who operates only by reactions. It is not to the apparent evil that the remedy must be applied, but to its cause. The cause of the moral power of gold lies in the venality of public offices; that of the excessive superabundance of indolent tradesmen in our cities, in the imposts which degrade the inhabitants of the country; that of the mendicity of the poor in the overgrown possessions of the rich; that of the prostitution of females in the celibacy of the men; that of the prejudices of the nobility in the resentments of the vulgar; and that of all the evils of society in the torments inflicted on children.

For my part I have spoken out, and could I have addressed the assembled nation from some point of the horizon where Paris is discernible, I would have pointed out to it on the one hand, the monuments of the rich, thousands of voluptuous palaces in the suburbs, eleven theatres, the steeples of one hundred and thirty-four convents, among which rise eleven wealthy abbeys; those of one hundred and sixty other churches, twenty of which are richly endowed chapters: and on the other hand, I would have shewn it the monuments of the wretched, fifty-seven colleges, sixteen courts of justice, fourteen barracks, thirty guard-houses, twenty-six hospitals, twelve prisons or houses of correction. I would have called its attention to the extensive gardens, courts, greens, inclosures and dependencies of all these vast edifices on a space less than a square league and a half in diameter. I would have asked whether the rest of the kingdom is distributed in the same proportion as the capital; where are the properties of those who furnish it with food, with clothing, with lodging, and of those who defend it; and what at last remains for the multitude, to support citizens, fathers of families and happy men! O ye powers political and moral! after having pointed out to you the causes and the effects of our calamities, I would have prostrated myself at your feet, and would have expected, as the reward of truth, the same recompence as the peasant of the Danube hoped to obtain of the insatiable powers of Rome.*

* As a sequel to this Study, the reader may turn to that on Education, at the conclusion of the work.

END OF VOL. I.

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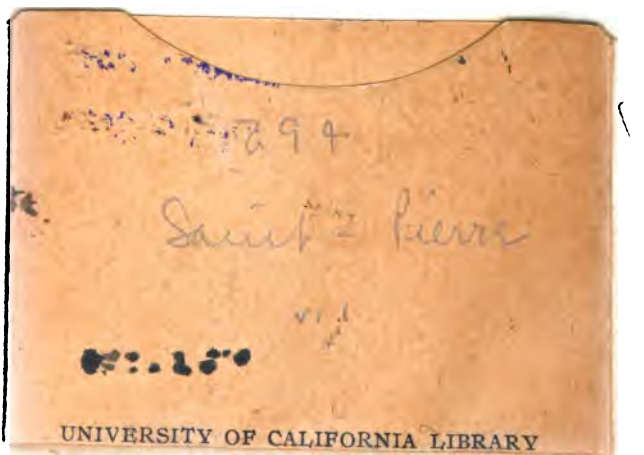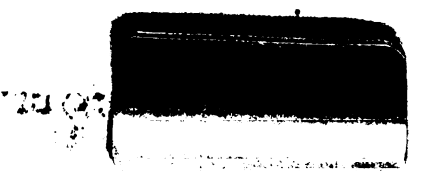
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